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The Medical Horizon*

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TWENTY years ago, even ten years ago, I would have unhesitatingly described the medical horizon with only momentary pauses to recall scientific facts. It would have been just about that easy because science was the dominant factor in discussions of medical progress. New drugs, nutrition, surgery, anesthesia techniques were part of this discussion and they could be related to the relief of pain, the lessening of suffering, the prevention of illness and the cure of the sick. It was perfectly obvious, too, that modern chemotherapy had been born and one could dissect it and lay it piece by piece on top of a symptom or disease knowing the dissected drug piece and the health complaint were usually well paired therapeutically. Furthermore, one knew that preventive and curative medicine was, figuratively speaking, just "getting up steam." Like the locomotive, it was ready to respond to the "high ball."

Today, however, the issue cannot be defined so clearly and the medical horizon as a result is less clearly in focus. It's still possible of course to anticipate new cures, new corrective measures, new preventive measures and it is still possible to point with some feeling of security to the diseases which will be brought under further control in the near future and those the control of which will require a longer period of time. It also is possible to predict reasonably accurately the scientific techniques by which this will be made practical. What cannot be predicted now is the extent to which this medical progress will be permitted to go, the sociological methods which will prevail as influencing factors and the effects which this will have on the general welfare of mankind.

Or, in other words: Scientifically, the medical horizon could be unlimited but for various reasons it may not be thus. Why not? Well, there are some people in our country who are interested in promoting changes that have helped bring about the fall of other countries through the centuries. There are others who for selfish reasons raise obstacles to orderly scientific progress. And there are others who hesitate to move along with progress and they too put stumbling blocks in the path to better health. But the biggest obstacles to an unlimited medical horizon are misunderstanding and confusion. And these are not confined to the nonmedical population; they are prevalent also in health circles. However, it is the members of the medical care team that can be the most helpful in dispelling this misunderstanding and confusion and it is to this possibility that I would like to speak for a few minutes today.

One troublesome area is the hope that is prevalent today for an almost endless life, not only free of illness but filled with hap-

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piness and security. As people have learned that the life span has been increased they have decided this increase can be lengthened indefinitely. And as they heard of new so-called miracle drugs they have assumed that more are always just around the corner. And as they have heard of remarkable advances in other medical areas they have responded with a "Why not? Bring on the rest" attitude. The improbable is accepted, the impossible expected. But they have overlooked a few important things concerning length of life, biological productivity, cellular manipulation, and relationship, or lack of it, between medical progress and sociological progress. They may be ignorant of the facts, they may wish to ignore deliberately the facts, or they may simply be the victims of misunderstanding. But whatever is the reason, one fact remains—such actions encourage the emergence of members of the health team as favorite whipping boys.

Let me refer to a few specific areas where fact and fiction, science and emotion, and hope and deception are strangely intermingled.

Economist Frank Dickinson recently discussed the "three score years and ten" level we have reached in life expectancy. He pointed out that the expectation of life at birth in the United States reflected a gain of twenty-one years between 1900 and 1950, or a gain of four years for each decade. Between 1950 and 1960 the gain will be about two years in spite of the great medical progress made during this decade. Dickinson after examining available data concludes that any further lengthening of life expectancy will be a "gently rising plateau." Since the increase in life expectancy was greatly influenced by the reduction in infant mortality from more than fifteen percent to about two and one-half percent during this century, any disturbance of this level can be important. For example, in the last two years the rate has risen from 2.6 to 2.7 percent. It is conceivable, though, that this may be reduced eventually to two percent, even lower. Maternal mortality seems to be stabilized at about 4/100 of one percent. So, there seems to be little hope of increasing life expectancy very much by reducing infant mortality and maternal mortality.

The saving of life during infancy has much more to do with the lengthening of average life than does the saving of life during middle age or later. This is important because so many people have been led to believe that the lengthening of life expectancy can be achieved by turning on spigots from which can pour research funds to attack the diseases more prevalent in older age groups. Obviously, if diseases of the cardiovascular system and of the cancer group can be controlled the outlook for the older age group is cheerful, but the challenge is more difficult than at the other end of life. Furthermore, the magnitude of the reductions that would be necessary to achieve great gains, for example, an increase of ten years, during our life time would be impossible because this would affect primarily a group of people already in their sixties, the present average age of death from cancer being 64 years. After all, they would only add a few more years to the totals from which expectation of life at birth is estimated. The same reasoning is true for those with diseases of the heart. As Dickinson has pointed out, perhaps the confusion arises because some people think of "span of life" when they discuss life expectancy. If, of course, heart disease and cancer, to mention two diseases, were to be completely controlled the future would be different but these problems probably will not be removed in the foreseeable future but will be controlled piece by piece, step by step.

What does this mean so far as the confused, or misinformed, segments of the population are concerned? It means that we in this country are learning to die old instead of young. This is part of the picture developed through the achievements that have increased life expectancy. The privilege of dying old is an accomplishment of this century. While mortality improvements in the second half of this century may be realized more slowly even though eagerly demanded by those who are approaching the older age groups, they should always be related to what has been

accomplished and how these accomplishments have been effected. Another interesting aspect of this problem is the change in social and medical progress insofar as comfort is concerned. While we may not be able to add many years to life expectancy for the next few decades we will be able—or at least we should be able—to point to how we are enjoying better years if not more years. Too often overlooked today is the richness of the life we are enjoying as too many people are thinking only of longevity of life, not of fullness of life.

Another area where fact and fiction and science and emotion are sometimes intermingled is the role which has been assumed by the various contributors to the health progress we have experienced. Obviously physicians and surgeons have contributed with their diagnostic, therapeutic and preventive measures. This is an old story. So have the manufacturers of drugs contributed as they provided tools for physicians to treat specifically, and surgeons to cut daringly. They also have supplied money for schools and research and they have spread into sometimes forgotten but nevertheless important fields such as veterinary medicine and agriculture; need for food for human consumption and for the control of transmissible disease are just two of these responsibilities. But this too is an old story, although like the physician's story is not told often in sufficient detail in the right places. But what about food production, housing, sanitation, industry as a whole, transportation, public health measures, hospitals, pharmacists, nurses, and education, to mention only a few contributing factors to medical progress? They are important, all of them, but unfortunately their interrelated role is sometimes forgotten. This is regrettable as each contributing force is effective only because of the others and this relationship and its preservation should be jealously guarded as a right as well as a privilege in any free country. But instead of exploring areas of mutual interest those with such interests at stake too often ignore, in fact, sometimes battle, their colleagues. The members of this audience know the significance of ignorance in lands where wars have been fought, and they also know the significance of a "divide and conquer" policy. It's time—and I truly believe not too late—for each of us to take a good look at our position and the positions of our neighbor and then prepare to take appropriate actions. This is done even on the playing fields for sports and certainly seems in order for a much more serious game in which life and death and freedom and tryanny become opponents.

During recent years there has been much discussion of medical care needs and their costs and too little mention of the difference between needs and desires and of the factors determining costs. And yet it concerns all of us whether we wear a uniform or civilian clothes, are employees or self-employed, are teachers or students or housewives or taxpayers. It's sometimes difficult, I admit, to discuss medical costs when illness strikes and emotions are dominant, and, on the other hand, when health prevails and sickness is a disagreeable memory of the past. But the time has come to discuss a few things widely and searchingly, and the cost of being sick is one of these.

During my almost three decades of exposure to medical problems, first as a student and later in other capacities, I have been impressed with the cost of being well about which little is heard. And yet, every day, each of us buys food, pays rent or taxes, buys furniture for sleeping, and refrigerators to store food and insists on pasteurized milk and purified water. Furthermore, we pay substantial premiums every year for insurance in the event a house burns, furniture is stolen, a stranger falls on our doorstep, our car runs into another car, a house or a pedestrian, or we die before our children are educated or to care for the needs for other members of the family. As a rule, our complaints, except perhaps for car insurance, involve not what we have to pay in premiums but only that they seem to arrive for payment almost simultaneously or too frequently. But when insurance premiums for hospital and other medical bills arrive how the howls begin—or so we are led to believe by some people. Or

when someone has to pay several dollars for a prescription the cry is loud—or so we are led to believe by some. The thing that bothers me most about this situation is the seeming contradiction between the intelligent people of our country paying thousands of dollars for homes, cars, furniture, pleasure and insurance premiums to continue such enjoyments, and paying a few dollars for a prescription or several times this sum for premiums on so-called "sickness insurance" or "health insurance." Somehow this is not consistent with the intelligence and the determination of a self-sufficient people that made and keeps the U.S.A.

So, what are the true facts?

Unfortunately, we do not know enough to set forth the facts in order of importance. I cannot yet accept the belief that our fellow citizens want to give up their personal freedom and privileges so that a government can determine business practices and personal habits. I do believe, though, that in the health field, the public is not sufficiently informed nor has it been made to recognize its personal obligations as good parents, educators, taxpayers and citizens. I also believe that the public if given facts and guidance will exercise intelligent decisions as it has done throughout most of the history of this country. The responsibility for gathering, disseminating and interpreting facts, however, rests with those who are in a position to gather, disseminate and interpret facts. This means you and me and the organizations we represent and our colleagues, friends, and patients. We have a lot to do and all of us will be better off when we tackle the task.

A number of organizations and groups are now attempting to gather facts. Some are medical organizations, some are business, some are simply philanthropic. For example, the Pharmaceutical Manufacturers Association is now gathering data about the medical care picture so that each unit can be placed in proper perspective. This will take time but considerable activity is already underway and some very interesting facts have been gathered. The Health Information Foundation which has been a pioneer as it probed into some areas of medical care needs, public attitudes toward medical care, utilization of health services and other fundamental problems is amassing a collection of data that will provide revelations so far unavailable. Its director, George Bugbee, recently offered some challenging as well as interesting comments.

A definition of optimum medical care is difficult, according to Bugbee, particularly in view of the continual upgrading of a definition of rehabilitation. Between surgery, drugs and other factors, including a bond of faith in the relationship between the sick and their physicians, recovery and rehabilitation are constantly on the march forward. And as the risks formally associated with illness decrease and as the unit of medical service changes the difficulty of defining optimum medical care is increased. Perhaps the task is not made any easier by the fact that the United States has the highest income per capita of any country in the world—and this probably will continue to grow with good distribution, according to economists, among the population. This helps increase, of course, the demand for medical care, although it does not necessarily have any direct relationship with needed medical care. Regardless of this, however, medical care too will be well distributed throughout the population. How this care will be distributed is now the subject of many debates and according to Bugbee, poses a challenge for those with knowledge to assist the public in making a decision that's truly in its best interest. Obviously, the best interest may be far different from that observed when political expediency exerts control.

One of the advantages of our kind of society is that the people of this nation can exercise discretionary spending, and as gross income per family increases more money is available for other than basic necessities which is reflected not only in the items in the market basket but in the expenditures in the health field for other than emergency and life-saving measures. This is where public demand and public need are not always clearly separated. At the moment, government at all levels, business and philanthropy

spend, according to Bugbee, about 5½ billion dollars a year to provide medical care, and personal consumption expenditures cost another 16 billion dollars. This represents 5.5 percent of the income which is more than in early years but it also represents an investment by the public, just as bonds and stocks and real estate, or for that matter, an overcoat for a stormy day, represent investment. The latter, i.e., financial, investments offer economic security. So does the investment in health but in addition it offers extra dividends such as happiness and comfort and well being. Recognition of such facts help explain why 70 percent of our population is now enrolled in some form of so-called health insurance. In fact, as much as 90 percent is enrolled in some industrial areas. Related in significance to this awareness of health is the fact that the number of visits people are making to physicians is increasing but there is little variation in physician visits between the lowest income group and the highest.

Such data are an encouraging response to the often heard statement "Americans cherish their independence and will pay for it as well as fight for it." You and I realize that these figures show the typical American's response when he has money in his pocket or when his neighbors see a need to help him. Unfortunately, however, some people would like to twist around the figures and their meaning so that it would look as if this represents need—in fact, they would argue unmet needs—rather than an accomplishment. Here is where you and I, our friends, our relatives and our associates can be extremely helpful by dispelling confusion and doing away with misunderstanding.

Part of the confusion and misunderstanding is caused by criticism from those who would like to change our way of life from a "do-it-yourself" basis to a "do-as-you're-told" approach. They overlook, deliberately of course, what has been accomplished and point only to what remains to be done. Or even worse at times, they twist the facts to produce an act of deception that would be unforgivable for those with a conscience and which provokes discouraging bewilderment on the part of the uninformed. For example, some critics attack the increase in unit costs of medical care but fail to report what any careful examination of the medical care component of the Consumer Price Index would reveal. Furthermore, they fail to refer to the improvement in quality of the services rendered. They fail to report what causes increases in some units, for example, hospitals where salaries and wages are so important. And as for drugs, they fail to mention the decline in prices as mass production for which the U.S.A. is noted swings into action, as the increase in effectiveness of drug therapy with subsequent lessening of days of illness and decrease in crippling complications. And they fail to mention in their public statements that when the public criticizes at times medical care costs it is no more critical of this than of increased food costs, clothing costs and rents, according to studies by the Health Information Foundation. In fact, Elmo Roper in a recent survey of public opinion in New York City revealed that most people thought their premiums for "health insurance" were much higher than they really were, which indicates in one way how confused are some people about medical care costs and how such confusion can be capitalized on by the critics.

How this confusion and its perpetuation can be harmful is readily apparent in testimony given by some self-styled experts who speak not with personal experience or a background of training and experience, but by virtue of appearing as representatives of influencing citizens groups. For example, one such individual recently in hearings made such sweeping and unsupported statements as "high costs of modern medicines discourage families from getting proper medical care," "another expedient used by many families nowadays . . . is to get a smaller amount of a medicine than the doctor prescribes," "often druggists themselves suggest a smaller amount when a family complains about the price or doesn't have enough money to pay for the prescription."

So far, I seem to have confined myself to comments on critics of the members of the

health team. I could spend more time on this subject as the subject is a serious one deserving careful consideration. However, I have done this only to emphasize that the medical horizon is not one of only scientific medical activities; these may be completely overshadowed by activities non-scientific in origin. Why should this be? Is it because there is unhappiness over what has been accomplished scientifically? I doubt it. What, then, is the problem? I suspect that the problem lies partly in the failure of the population to prepare itself for the achievements that come our way, scientifically, economically and otherwise. In a way, we're too far ahead of ourselves. Scientifically, we have not caught up with ourselves community-wise. We see the possible but fail to be practical which can only lead to frustration and exasperation. So in our frustration we turn to "whipping boys" and the "medical care woods" are full of them with plenty of people today to offer whips.

If we could persuade the population to ignore those who have purely selfish motives behind their critical comments and those who are socialistically minded at least long enough to become properly informed on what has occurred healthwise, how it has come about, and how such advances can best be made we would be making a contribution not only to our country but to mankind. Anything which unnecessarily stifles education, research, relationship between patient and physician, choice of drugs and other facets of good medical care is not in the best interest of the patient. He learned how to pay for fire insurance, good food, rent, clothing and cars, and if given helpful facts and time he will meet his obligations as a free citizen, family man and taxpayer in the health field. Help is needed, though, and all of us regardless of our main daily activities can do much in this respect as individuals and through any societies and organizations which we may represent. If scientific achievement is far ahead of sociological achievement in community life it behooves all of us to do what we can to bring both into proper relationship. Otherwise, failure by some critics to keep up with, understand, defend and preserve medical progress such as we have seen it during the last two decades could well be the basis for a slowing of this march onward toward the medical horizon.

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"To me, the Red Cross is a light in the darkness. We all owe a debt of gratitude to those who set it there so many years ago. And it is the duty of all of us to see to it that it does not go out."—Dr. ALBERT SCHWEITZER

The Role of the Army in Survival Care Training

By

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FOREWORD

THE practice of medicine during peacetime is governed by custom and law and the education and training of the various members is in accord with these limitations. In wartime or time of emergency, however, the situation is different. In a mass casualty situation what measures will be necessary to take care of the sick and injured when the supply of doctors has been depleted; when medical facilities are damaged or greatly over-crowded or even destroyed? These and many other questions must be answered. Many duties and procedures will have to be taken over by medical personnel other than physicians.

To properly prepare the U. S. Army to cope with the exigencies of a mass casualty situation entails a training responsibility of tremendous magnitude. Not only must the officers and enlisted men of the Army Medical Service be reoriented and trained to meet the demands incumbent upon such a situation but every officer and every enlisted man of the other branches of the service must receive some level of instruction. In brief *each individual* must be prepared to know some of the fundamentals of survival care to keep himself alive as well as his buddy. In summary we *must* train *every officer and enlisted man* to some degree in this vital area if we are to survive the onslaught of nuclear warfare. Our sights must not be narrowed to the needs only of the Army but the utmost cooperative effort must be given the other military services and, wherein feasible, to our civilian counterparts in their efforts to prepare for a mass casualty situation. The efforts expended by our training people have been arduous, and it has not been easy during the last three years to obtain the program we need to answer the previous questions.

TRAINING THE OFFICER

Let us take a look at the training responsibility as it relates to the officer and first more specifically the officer of the Army Medical Service. The Army Medical Service has obtained a very high degree of proficiency in the field of officer training in the management of mass casualties. This position is based on the following:

a. The majority of officer's courses conducted at the Army Medical Service School at Fort Sam Houston, Texas include instruction in Emergency Medical Care and/or Field Surgery.

b. The majority of Army Medical Service officers have attended or will attend courses in Management of Mass Casualties.

c. All Army hospitals are required to maintain plans which outline operational procedures to be followed during a mass casualty situation. These plans provide for emergency medical care teams and for recurrent training of personnel in the treatment of mass casualties.

In addition, Training Curcular 8-1, "Training in Emergency Medical Care," was published and implemented in 1955. This circular provided minimum essential training in emergency medical care for all Army Medical Service officers (other than Medical Corps) of the active Army, Army National Guard and Army Reserve. This training was comprised of 12 hours and encompassed the following subjects:

a. Hemorrhage and Shock (2 hours).
b. Burns (1 hour).
c. Artificial Respiration (1 hour).
d. Treatment of Wounds (3 hours).
e. Dressing and Bandaging (3 hours).
f. Fractures (2 hours).

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The conduct of this training was the responsibility of the home station commander and was completed by the summer of 1956. We are currently taking steps to reestablish this training requirement on a yearly basis, so that 12 hours of instruction can be given to all officers of the U. S. Army.

A two-weeks course in the Management of Mass Casualties to include such vital subjects as casualty estimation, triage, evacuation, radiobiology, emergency medical care and the medical team concept was established in 1954 at the Walter Reed Army Institute of Research. The first two courses were conducted for Medical Corps officers only, with approximately 30 per class. These courses were ultimately reduced to one week and simultaneously expanded to a capacity load of about 100. Four of these courses were conducted each year and then in 1958 reduced to two each year. After the two initial courses attendance was extended to officers of the other branches of the Army Medical Service, personnel of Federal and State Medical Services, National civilian agencies related to medical and allied medical fields and a limited number of nonmedical personnel and Foreign Nationals. A similar course was established at the Army Medical Service School at Fort Sam Houston, Texas in 1957. The Army Medical Service School conducts this course six times yearly with a class quota of approximately 120. Many deans and other faculty personnel of our medical schools in this country have attended these courses.

Since the inception of these courses at the Walter Reed Army Institute of Research and the Army Medical Service School the following number of personnel have attended:

Army Officers	2812
USAF Officers	173
USN Officers	100
Other Federal, State and Civilian Health Agencies	464
Foreign Nationals	45
TOTAL	3594

In 1957 a course was initiated at the Walter Reed Army Institute of Research ostensibly to better prepare key staff and command officers of the Army Medical Service in the "Principles of Medical Operations in Nuclear Warfare." This course is four weeks in length and is conducted twice a year with a quota of 24 officers. This course is primarily geared to the needs of the Division, Corps, Field Army and Theater Surgeon and their key Medical Service Staffs. Thus far 64 officers of the Army Medical Service have attended.

During the past five years 41 officers of the Army Medical Service have been sent to select civilian courses (6-9 months) for advanced training in radiobiology to prepare them to serve as top specialists and advisors in the fields of nuclear medicine and nuclear science. Of these, 38 have upon completion of their civilian training, been sent to a package training program consisting in sequence of 6 weeks in Industrial Health Physics; 3 weeks for Special Medical Orientation at the Defense Atomic Support Agency (formerly AFSWP) Sandia Base, winding up at the Walter Reed Institute of Research for a 2-months course in "Medico Military Application for Nuclear Medical Officers."

EMERGENCY MEDICAL CARE EQUIPMENT

In March 1956 the Secretary of Defense concluded that medical material was required for mass casualty treatment and further concluded that training programs must be in existence to train all military personnel in the specific use of items in the Phase I Unit. (This unit consists of initial emergency treatment stocks for self or non-professional aid for casualties occurring in 100 personnel up to 72 hours.) It was further outlined that training should be given in the use and administrative management of items in the Phase II Unit. (The Phase II Unit consists of the items and quantities needed for professionally directed care for 1,000 casualties for about 20 days post-attacks.)

Phase I Units are being prepared for distribution within the United States and overseas. All Units will be delivered on a priority

basis as established by the Office of the Secretary of Defense.

A Joint Task Force committee composed of representatives from the Department of Defense (Health and Medical) and the three departmental medical services was appointed to plan for the medical items considered essential for the Phase I and Phase II programs. These two Phases are defined as follows:

Phase I: Care given to attack casualties by other than medical personnel, in most cases without medical supervision. Casualties will either treat themselves or be cared for by other non-medical personnel.

Phase II: Care given to attack casualties primarily by nonprofessional medical personnel under professional supervision. This it also emergency-type treatment but is more extensive than Phase I care. It is directed towards saving life, minimizing injury, and initial definitive care. The casualty will be in medical channels.

In the development of the listings of supplies for the Phase I and Phase II Units, the Joint Committee considered the over-all medical problem, determined the type of casualty most likely to occur, and judged the type of emergency treatment most applicable under austere conditions. The basic assumptions included: first, that little or no help or aid would be received from outside the damaged area in the immediate post-attack period; second, that the majority of the immediate treatment must consist of "self-aid" or "buddy-aid"; third, that the capability of the average lay person even with minimum training to render survival-type care was a limiting factor; fourth, that any selection of items must consider their transportability, shelf-life expectancy and general simplicity; and fifth, that some provision should be made for more extensive care in the event, through some possibility, professionally directed supervision was available. From these studies, an austere list of medical supplies consisting of 27 items, which professional opinion considered absolutely essential, was developed for Phase I and as mentioned before, provides initial emergency treatment stocks for self or non-professional aid for casualties occurring in 100 personnel up to 72 hours.

In developing the list of items for Phase II, supply consideration was given to the assumptions that initial definitive care would be given in medical channels and at least with the minimum of professional supervision; that packaging would not be a prime consideration, but quantity must be adequate for, at the least, austere care to large numbers of casualties. With these considerations in mind, a listing of 75 medical items was developed for the Phase II Unit.

In view of the training already being given to Army Medical Service personnel in the care and management of mass casualties and in the care and administrative management of supplies and equipment comparable to those in the Phase II Unit, the issue of such units would not generate additional training requirements.

From an over-all point of view and from administrative purposes, the Emergency Medical Care Program is divided into four phases. Each phase is based on an assumed set of circumstances and situations during and following a major disaster period and the breadth of the program encompasses considerations from the selection of individual items required in the emergency treatment of nuclear casualties to the development of knowledge of our national resources. In an actual disaster, all of the phases of the program could run concurrently.

Phase I is that immediate period of 72 hours post-nuclear attack during which little or no direct professional medical help may be expected. It is assumed under this situation that medical care will be given to casualties by other than Medical Service personnel, in most cases without medical direction or supervision. Casualties will be expected to treat themselves or be cared for by other non-medical personnel. It should also be pointed out that Phase I medical care is more extensive than routine first aid. It is emergency care, directed towards saving life and minimizing injury until the casualty enters medical channels. The items included

in the Phase I Unit will require more than common knowledge of first aid treatment procedures.

Phase II again is that 20-day period after attack, when some professionally directed care has been initiated, but full definitive care or supply cannot be established. It is assumed that the medical care received by casualties during this period primarily will be administered by non-professional medically trained personnel but under professional supervision. This, too, is emergency-type treatment but is more extensive than Phase I care. As planned, Phase II care will consist of those emergency treatment procedures which are required to save life, to further minimize injury and to provide initial definitive care.

Phase III is that support given by professional medical personnel and ancilliary medical personnel under professional supervision. It will consist of preventive medicine and patient care, out-patient and definitive treatment, practiced under severe shortages of material, often in improvised facilities with limited professional and technical staffs. Primary emphasis will be placed on prevention of diseases and injury and on restoring the greatest number of sick and injured to duty as soon as possible. Studies are being conducted at Department of Defense level on this phase of the program.

Phase IV involves military medical resources resupply. This consists of determining military medical requirements (manpower, facilities, materiel and services) which must be obtained from the surviving national economy to support the military medical mission and the requisitioning, procurement distribution and use of the resources obtained. Studies of medical resources resupply are being made by the Department of Defense.

In order to implement the training required for the utilization of the emergency medical type items in the Phase I Unit, the revision of DA Training Circular 8-1, "Training in Emergency Medical Care" and a Change to Army Subject Schedule 21-4, "First Aid" was recommended. Since the instruction required would be to train all personnel in the specific use of material contained in the Phase I Unit, the recommended revision and change would satisfy this training requirement.

The training program outlined in the proposed Training Circular was not intended to duplicate similar programs that are presently in effect for officers. It is intended to provide an appropriate standardized training program for the training of all officers, Army-wide, in the immediate care of mass casulties, to include training considered necessary for officers to obtain and maintain proficiency in the use of items in the Emergency Medical Treatment Unit, Phase I. It is recognized that some provision is made for training of officer personnel in first aid in training publications, training films, maneuvers, OCS, ROTC and other schools; however, the training given is not considered adequate in most instances for the qualification of officers in first aid or in the familiarization with the emergency medical type items in the Phase I Pack.

Training the Enlisted Man

Army Subject Schedule 21-4, "First Aid" outlines 20 hours in first aid. Eight (8) hours are scheduled during the basic combat training phase, including an explanation, demonstration and practical exercise in first aid procedures; 4 hours are scheduled during the advanced individual training phase, including an orientation, review and proficiency testing in basic principles and techniques of first aid. The remaining 8 hours are divided equally between the basic and advanced unit training phases and includes a tactical exercise in the application of techniques in the principles of first aid.

A training circular, tentatively titled "Training of AMedS Personnel for Disaster" has been proposed. This circular outlines for each corps of the Army Medical Service certain advanced medical skills in which they must be trained. Naturally, many of these skills are foreign to many of our personnel at the present time. In the event of a nuclear attack, our medical problems

will be magnified and the resulting casualty load will make it essential that Army Medical Service personnel perform many tasks and accept responsibilities considerably beyond those required of them in conventional warfare. The objective of this training, which pertains to enlisted as well as officer AMedS personnel is to insure that all personnel attain and maintain as a minimum, proficiency in certain select techniques essential to the field of emergency medical care and survival care.

The adequacy of prescribed numbers of hours of instruction in medical subjects has been the object of continuous interest and study. For the first time in the history of the Army Medical Service, the enlisted man is obtaining extensive indoctrination in the basic medical essentials for saving his own life and that of his fellow soldier—both in conventional warfare and in a mass casualty situation. This had its beginning more than four years ago in studies for the establishment of standards of proficiency to be reached by the non-medical soldier that would enable him to save his own life and the lives of others when faced with medical emergencies and overwhelming casualties. The Surgeon General recommended extensive indoctrination of all soldiers as necessary in this respect, and that such indoctrination should be given by Army Medical Service personnel at U. S. Army Training Centers. A class of 10 officers and 45 enlisted men was selected to carry out the objectives of this new program and was given special training at the Army Medical Service School. At the completion of this training, they were sent to the U. S. Army Training Centers (Fort Dix, Fort Chaffee, Fort Jackson, Fort Bliss, Fort Leonard Wood and Fort Knox). As has been discussed, the enlisted man will be trained in the use of certain items in the Phase I Unit. This training will be incorporated in Army Subject Schedule 21-4, "First Aid." In addition, Army Medical Service enlisted personnel will be trained in certain medical skills which they may be called upon to perform in a mass casualty situation.

Medical Education for National Defense (MEND)

It was recognized as early as 1952 that there was an urgent need for medical graduates to be better informed concerning the application of principles of medicine and surgery to a military situation particularly in a mass casualty situation. This training was of particular importance if such graduates were to serve competently in the Armed Forces or as civilians in case of a national emergency or disaster. As a result the Medical Education for National Defense Program was initiated.

To illustrate the problem, one has but to consider the disastrous effect of the Cocoanut Grove fire which occured in Boston in 1942. There were only 181 serious burn cases admitted to hospitals. Yet in a city stated by some to be the medical center of the United States, with no disruption of medical facilities, with no loss of doctors, and with adequate medical supplies available to take care of these casualties, the entire medical potential of the city of Boston was strained to the limit. One cannot but wonder what the city of Boston or any other city would do with let us say 100,000 burn casualties if the major portion of their hospitals, doctors and medical supplies were wiped out.

When the full impact of the situation is realized it is obvious that doctors must direct their thinking toward disaster planning and mass therapy as well as individual patient care. The orientation of our practicing physician is now being handled by civilian defense agencies, however, as a parallel measure, it is firmly believed that we must also guide our medical students' thinking along these lines. The old adage, "As the twig is bent, the tree is inclined," is still valid.

Students must be taught triage, or sorting of patients, effective first aid, conservation of material, and the efficient handling and therapy of large numbers of cases. They must be taught how to move casualties effectively and safely from damaged areas to places where concentrated treatment can be given. They must be taught how to set up improvised hospitals in schools, auditoriums,

fair grounds, tents—anywhere that casualties can be concentrated to give whatever treatment is available. They must be taught how to distinguish between those cases which therapy will help and those cases which therapy will not help, since the concept of humaneness which now guides the medical profession must sometimes be set aside in order that material and effort will not be dissipated. They must be taught how to train, direct and supervise volunteer workers effectively. Finally, they must be taught how to fit themselves into the over-all plan when it goes into effect so that the greatest good comes to the greatest number.

As mentioned before, students must be taught to conserve material. In the case of a disaster of this type there will not be enough medical supplies to adequately treat all of the casualties and available supplies must be conserved with the idea of obtaining the greatest good for the greatest number. In addition, a great deal of improvisation is going to be necessary. It is obvious that if there are 180,000 casualties in any one city it is going to be a matter of months before all of these casualties will be on their feet. Although nature will be the primary agency in their cure, the doctor must learn how to treat cases over long periods of time with minimum supplies and equipment.

It goes without saying that not only must medical students know how to take care of mass casualties, but also they must know the details of taking care of individual casualties. A proper balance between these two extremes must be established in order for programming to be successful.

In 1952, a two-year experimental program of Medical Education for National Defense was begun at the medical schools of Cornell, Illinois, Buffalo, Vanderbilt and California. Through the Department of Defense, U. S. Public Health Service and the Federal Civil Defense Administration, seminars and visiting lecturers in military and disaster medicine were made available. Funds were provided for necessary teaching aids; for attendance by faculty members at military and civil defense symposia and for the part-time services of a local coordinator at each of the five participating schools.

The success of the two-year pilot study was such that it was decided to expand the Medical Education for National Defense Program by increments of ten additional colleges of medicine each year until all schools desiring to participate were included. With the inclusion of ten schools currently in process of being oriented, the affiliated schools will number 55 or about ⅔ of all the medical colleges in this country that offer four-year courses.

An important MEND function is acquainting medical faculty members with specific problems in military and disaster medicine by means of symposia sponsored by the participating Federal Services. Another aspect of the Medical Education for National Defense effort that has been popular with students and faculty alike is the arrangement for medical officers and scientists who are expert in some field of military or disaster medicine to visit the schools of medicine in the capacity of guest lecturers.

Thus, the Army as one of the several Federal agencies assisting this Program supports the MEND Program in the following ways:

a. Financial help.

b. Participation in the annual orientation tour.

c. Presentation of medical symposia, i.e., radiobiology, preventive psychiatry, management of mass casualties, infectious diseases and nutrition in disaster.

d. Allocation of quotas for attendance at Management of Mass Casualties Courses, Surgery in Acute Trauma Course and various exercise such as "Fire Drill" etc.

e. Supply of training aids on the subjects of burns, cold injuries, wound healing, war wounds, and radiation injuries.

f. Loan of training films and professional medical films on subjects such as Management of Mass Casualties, Management of Burns, Debridement, etc.

g. Supply of training literature pertinent to the Program.

SUMMARY

In summary, the Army supports in the training for disaster three distinct programs —the AMedS Program for officer and enlisted personnel of the Army Medical Service, the AMedS Program for non-medical personnel and the Medical Education for National Defense Program. We are not content with the progress we have made in training for a mass casualty situation. Only recently a pilot study was undertaken by one of our hospitals. This new project is designed to study the feasibility of training various Army Medical Service personnel such as dentists, nurses, veterinarians, Medical Service Corps officers and enlisted personnel in the more advanced procedures in the treatment of mass casualties.

We believe that these programs have already paid dividends, (1) in providing more extensive training in the management of mass casualties; (2) in medical facilities being better informed of resource developments and other advances in the Department of Defense and (3) in the establishment of a better understanding and closer cooperation between the Army and the civilian community—A cooperation and understanding which are not only desirable but mandatory in effectively coping with a mass casualty situation.

AT THE LADIES LUNCHEON—66TH ANNUAL CONVENTION, NOVEMBER 10, 1959

Left to Right: MRS. HANNA, MRS. H. H. TWITCHELL, MRS. G. B. GREEN, MISS MARITA HOULIHAN

Left to Right: MRS. A. L. JENNINGS, MRS. B. W. HOGAN, MRS. ROY WOLFORD

Self Aid and First Aid Training

A New Doctrine for Non-medical Personnel

By

COLONEL ARNOLD L. AHNFELDT, MC, *U. S. Army*†

WE, AS A NATION, must be capable of withstanding staggering losses, both among the military and civilian population, should there be another war. We hope, of course, that will not come. We must also have an increased capacity to prevent the wholesale mortality which will result. The advent of nuclear warfare has added a complete new set of circumstances with which we must be prepared, as a nation, to cope medically as well as tactically.

Heretofore, on the battlefield conventional ground warfare has followed the pattern of a line of contact with the enemy near which casualties occurred at a fairly predictable rate over a period of time, depending upon the type and severity of the action. Medical aidmen have accompanied or followed immediately behind combat troops to give first aid and to evacuate the wounded to battalion aid stations.

There doctors were on hand to give emergency treatment, triage, and arrange for the evacuation of those who needed more extensive treatment. It is to the credit of the medical services that unceasing efforts to improve field medical treatment based upon advances in medicine and surgery and stimulated by two recent wars have led to a progressive reduction in deaths occurring *after* patients reach medical treatment installations. In this the front line evacuation of critical casualties by helicopter instituted in Korea by Col. Chauncey E. Dovell, USA, Ret., then Eighth Army Surgeon, has also contributed a significant part.

The disturbing factor is that there has been little or no reduction in deaths occurring *before* patients reach a medical treatment station. Statistical appraisals can demonstrate little improvement in mortality in advance of the first medical treatment station since Civil War days. Yet, the possibility of war of the future makes it imperative that we direct an all-out effort to reduce preventable deaths occurring at or near the source of injury to conserve our fighting strength.

With weapons the magnitude of atomic and hydrogen bombs deliverable by airplanes, guided rockets and now cannon, present day field medical service, excellent as it is, becomes woefully inadequate. Casualties, instead of occurring at a relatively low rate on or near the front line, will occur instantaneously in vast number, and in any part of the combat area, front or rear. Present day conventional field medical service, even if increased to any conceivable degree, would still fall far short of dealing with the casualty load thus suddenly created. We should not delude ourselves into believing that we could ever cope with the problem strictly within our own medical resources. I think we must accept the use of additional outside means as a very basic necessity. Then, what other means can we employ? The answer seems readily apparent.

We must train the soldier and the civilian himself and make him much more proficient than at present in the essentials of first aid emergency treatment. He must be able to help himself or his neighbor to the maximum extent possible until further medical care

† This paper, now modified in some respects, was originally presented on 12 Jan. 1955 at the course on Medical Care of Atomic Casualties, Walter Reed Army Medical Center, Washington, D.C., while the author was assigned to the Office, Chief of Army Field Forces. Formerly Commanding officer, 121 Evacuation Hospital. Now: The Inspector General, Office of the Surgeon General of the Army, Washington 25, D.C.

can be provided. This in effect, introduces two new echelons of medical treatment in the Army in advance of the battalion aid station —namely *self aid* and *"buddy"* aid, in addition to the treatment provided by the company aidmen. Among civilians this similar cooperation must obviously attain. Only in this fashion can we intelligently deal with mass casualties.

Perhaps we should pause for a moment and discuss again the types and numbers of casualties we may encounter from atomic warfare and which will require first aid. From the surgical standpoint these do not present any new entities. They are old and familiar problems: burns, fractures, blast syndromes, multiple lacerations, sucking chest wounds, hemorrhage, shock, unconsciousness, and the like, produced by the thermal and blast effects of nuclear weapons. From a medical point of view, however, we do have one new entity, and victims affected by this condition may far outnumber all others with the larger yield nuclear weapons. These are, of course, the casualties of ionizing radiation. Air bursts cause the least lingering radio-activity in a nuclear explosion. Thus efforts to administer first aid are hampered only momentarily by necessary precautions against this hazard. Those caught by the initial gamma rays, however, will likely become casualties, the immediacy depending upon the severity of exposure. We also know regarding the atomic bomb, based on the Hiroshima and Nagasaki statistics, that approximately 50% of the fatalities will be burn cases, 35% will be blast injury cases, and the remaining 15% ionizing radiation cases. Moreover, an additional 10% of all other cases will be combined with radiation effects. How these percentages may be altered by the hydrogen bomb we can only speculate. In numbers we also have to depend upon hypothetical considerations. Obviously, the number of casualties will vary in accordance with the kiloton or megaton yield of the blast and the density of persons in the area.

Whereas all past experience in modern warfare has confirmed the validity of the ratio of 1 dead to every 4 wounded, most opinions believe that there will be a much higher proportion of dead to wounded in atomic warfare. The Hiroshima bomb killed 70,000 and injured 70,000 over a 5 square mile area. The Nagasaki bomb killed 36,000 and injured 40,000 over a 2 square mile area. It must be remembered that these bombs were of relatively low yield. It is because of these considerations, and that many of the deaths will be preventable deaths occurring simply from lack of proper immediate attention, that self aid and first aid attain such tremendous importance. We must vigorously strengthen our hand at this point if we expect to reduce the death rate appreciably. *Simple first aid measures will be of inestimable value.*

To make up for lack of numbers we must make better use of the personnel we have. This means that we must conserve our technological skills, provide improved organization, provide better protection of existing combat forces, and, again, expand our means for first aid and resuscitation to such an extent that they become generally available at a moment's notice to casualties at the point of injury.

I think we recognize that any transportation to take patients to a place where they can be treated by trained medical personnel would not be available in time to be of any value to a large number of the casualties produced by an atomic explosion unless the patients have had attention beforehand. If many of these persons are to be saved they must know how to administer aid to themselves, when conscious and able, or they must be given first aid by their less-affected neighbors.

In the combat areas soldiers on the fringes of the devastated area may be called to help. Previous training will be invaluable. However, we must face the hard and cruel fact that the commander on the fringes of the damaged area, particularly when such area is near the front, will be greatly concerned with preventing the enemy from following up the advantage gained and may be forced to prohibit the use of any of his troops for

assistance in the damaged area. This becomes a command decision.

The area damage control system must provide for help from another source under such conditions and this will most likely have to come from combat support troops in the rear who can be spared temporarily. Medical personnel on the fringes, of course, will be used to the maximum of their availability. But again, we come to the same conclusion. To rely on medical personnel alone falls far short of solving the problem. We must teach everyone proficiency in self aid and assistance to his neighbor. In this regard, there are those who ask how much help can we expect on this "buddy" basis since the "buddy" will presumably be subjected to the same stress as the victim. This is not altogether true. The "Buddy" and others like him may have been more fortunate in their protection from the effects of the nuclear explosion by reason of having been in a trench, foxhole, cave, armored vehicle, sturdy building, or the like. Trained in the necessary precautions to observe for himself after a nuclear explosion and trained in first aid, this "buddy," and others like him who have been spared, literally become the "men of the hour" until additional aid can reach the afflicted persons.

If a person be pinned down by a fallen timber, and the chest is compressed so that he is unable to breathe he could be freed from the offending object and be given artificial respiration. If a person be burned and in primary shock from the thermal effects of the explosion he could be placed in a relatively protected place, covered with a blanket, and if conscious be given fluids by mouth. If a man be knocked unconscious from flying debris, a "buddy" can free the victim's gas mask and place it over his face to protect him from the oppressively heavy dust cloud which may be prevalent and thereby prevent him from being asphyxiated mechanically from the dust-laden air. If an unconscious individual be lying in an area of high radioactivity from a ground burst or fall out, he could be moved to a culvert or shelter, where the hazard is reduced in intensity. A fractured leg could be splinted. Hemorrhage could be controlled. Obviously, some measures are within the capabilities of the victim himself, if conscious, and then may more properly be termed as self-aid. In these and numerous similar ways many casualties may be spared who otherwise would be sacrificed. In fact when we approach the problem in this manner it no longer appears quite so overwhelming and insurmountable; a ray of hope appears.

Now let us analyze the first aid training given non-medical soldiers and determine its adequacy for war on an atomic scale. When we examine the basic combat training program of 8 weeks (ATP 21-114) given to each soldier when he first comes into the army, we find that only 5 hours are devoted to the subject of first aid. This soldier goes on and receives 8 weeks of basic branch training of the branch of service to which he is assigned. In this second 8 weeks the non-medical soldier receives no further instruction in first aid. He then receives 7 weeks of small unit training followed by 6 weeks of advanced unit training before he completes his normal curriculum. In none of this additional training has any further mention been made of first aid in the schedule. In other words, in a total of 29 weeks, or 1,160 hours of preparation to make this individual a combat soldier, he has received exactly 5 hours of instruction in first aid. 1,155 hours to prepare this man to fight and defend himself *before* injury; only 5 hours of training to save himself and partner from dying *after* injury. It would appear that there is some slight disproportion or lack of balance here.

Before taking up the subject given in these 5 hours of first aid to present day soldiers as to substance and essentiality, we should first determine in our own minds what are the *minimum* essential lifesaving or supporting procedures necessary for a soldier to know in this atomic age. We should start by defining first aid. Webster's Collegiate Dictionary states that first aid is "emergency treatment given to sufferers from accident before professional care can be given." At first, I did not like this definition, but when

one analyzes it, the elements of time, urgency and the initiating event in several levels of medical care are expressed. A better definition might be the following: "First aid is the immediate treatment which can be administered by anyone to victims of serious injury which will enable them to reach professional care in condition and time to benefit by it." This definition has the added advantage that it clearly states the objective of all first aid.

Next, in determining the minimum basic first aid procedures it is necessary to teach for nuclear conflict, we should keep in mind the person's average intellectual level, receptivity, and dexterity. These factors will have a bearing upon the competency and proficiency we can expect to develop in the application of such first aid measures. They must be easy to learn and apply. In addition, remember that our objective is to have simple first aid instantly and generally available to all to attain maximum advantage. Remember that we have been prone in the past to exclude certain simple technical procedures from employment by unskilled people merely because occasional misapplication might result in injury. We must now accept this calculated risk as inconsequential.

Although we are confining our deliberations to the medical care of atomic casualties, it is purposely desired to direct our attention momentarily to the possibility of chemical conflict as well with the presence of the odorless and quick-acting nerve gases in the hands of our potential enemies. Self aid and first aid must be sufficient unto themselves here. When we consider the extremely short time elements involved, no other treatment is possible.

Now we are ready to tabulate what we believe are the minimum essential life-saving procedures. My suggested list is limited to the following; you may have another:

1. Application of a tourniquet
2. Bandaging
3. Splinting
4. Hypodermic injection by syrette or ampin
5. Administration of water and salt tablets
6. Artificial respiration
7. Manual carrying of the injured.

In addition thereto, I would give the soldier very elementary training in three subjects as augmenting the application of first aid measures; namely,

1. Triage
2. Patient posture
3. Psychological preparation.

Regarding the *application of a tourniquet,* there should be no disagreement in the essentiality of a quickly, well applied tourniquet in the face of exsanguinating hemorrhage. Hemorrhage is of such common occurrence, especially on the battlefield, and a tourniquet of such lifesaving consequence that everyone should be skilled in the application of an improvised version when an extremity is the site of injury. The use of types of material likely to be available should be stressed, such as a belt, tie, piece of rope, handkerchief, or the like. It is well that our doctrine on the periodic release of a tourniquet has been changed. More lives were lost by this than extremities were ever saved. However, we should substitute a periodic check instead to see that the tourniquet is still firmly applied, since jostling in transport frequently loosens the tourniquet, depriving the patient of its benefit.

Bandaging is also an essential yet elementary first aid procedure which can be readily taught to everyone. We have overemphasized in our doctrine the fact that bandages are used to prevent infection at the expense of forgetting that hemostasis is an even more important aspect of its use, and the only one of real first aid value. We should provide each soldier with an elastic bandage with a thick compress at one end to replace the present Carlisle dressing. In this way we can take better advantage of the hemostatic properties of bandaging while at the same time supporting the wound and preventing infection.

Next persons should be taught the rudiments of *splinting* as a basic first aid procedure. The value of splinting is well known as a lifesaving measure, particularly in frac-

tures of the femur in the lower extremity. Splinting to immobilize the fracture precludes the frequent triad of events of agonizing pain, shock, and finally death. We should teach the soldier the means to improvise splints such as with a rifle, bayonet, entrenching tool, tent poles, branches, fence rails, cardboard, newspapers and the like. In addition we should make cardboard splints an item of issue to all combat units. With the mass fractures which will occur in nuclear conflict, we should reevaluate the need for and eliminate the heavy and cumbersome Thomas splint in forward areas. A trough splint of cardboard or plywood is far quicker and simpler to apply and teach and serves equally well in all instances except for fractures of the femur. Logistically the corrugated cardboard splints used by Finland are also much easier to stack than the Thomas splint and take considerably less cubage to transport into the damaged area in large quantities for major disaster use. In femur fractures, the trough splint could be replaced by a Thomas splint at a higher medical echelon for traction purposes if surgical reduction has to be further postponed.

The necessary advent of *self administration of drugs* such as atropine and morphine makes it essential to teach soldiers the ability to administer syrettes and ampins quickly and efficiently as a hypodermic. In the case of nerve gases in which speed is tremendously important we should not quibble about lack of appropriate sterility but permit injections directly through the clothing if that be necessary. Frequent opportunities to practice the self administration of syrettes or ampins using normal saline solutions should be provided to develop proficiency and overcome reluctance. Hesitancy at the time of dire need can be fatal.

The *administration of water and salt tablets* is proposed as a basic and essential first aid measure. Obviously, there is no difficulty in the application of this measure, only in the instruction for the need of same. It is felt that the soldier should be trained in the need for administering water by mouth from a victim's canteen to counteract the progressive dehydration in burn cases. In addition, he should be instructed to add saline tablets to the victim's canteen before so doing. The inordinate transfer of the chloride ion to the tissues in burn cases, for which we give saline infusions in addition to plasma as definitive treatment, will likely find similar counteraction when administered in this fashion and improve the condition of these victims while awaiting delayed transportation. Some further evaluation of the effectiveness of saline tablets in burn cases when thus administered should be accomplished. If the foregoing conjecture is supported we have another valuable first aid measure readily instituted and easily accomplished by anyone.

The value of *artificial respiration* as a basic first aid procedure hardly needs discussion or emphasis. If, in addition to nuclear conflict, we be faced with modern chemical warfare, artificial respiration assumes outstanding importance since cessation of respiration is an early and universal symptom in the employment of nerve gases. A major effort is needed to improve our methods and techniques for this first aid procedure especially under the difficulties of exposure to enemy fire on the battlefield and in the environment of the lingering causative gas agent. Since the difficulties of application are so apparent, some simple drug beside atropine should be developed, which can be ingested by mouth and build up a prophylactic blood level of a counteracting agent. With such an agent, nerve gases will quickly lose their horror and lethal effect. In the matter of what techniques of artificial respiration to teach, we should decide upon and confine this to one method and then train every soldier to an outstanding proficiency in this method. Present studies would seem to favor the Holger-Neilson back pressure-arm lift method, since it permits a larger exchange of air than any other procedure, including the Schaefer technique formerly taught. Some favor direct mouth-to-mouth technique as being simpler to teach and apply.

The last basic first aid procedure included in my list is training in the art of improvised *manual carries for the injured.* The

need for removing unconscious individuals from burning tents, buildings, vehicles, or other inclosures produced by the thermal effects of nuclear weapons and in advance of the "fire storm" alone emphasizes the importance of this measure. If conscious and seriously injured the victim becomes an even greater problem from a manual transportation viewpoint. Without this knowledge the transfer of a victim to a point of relative safety for further first aid may be more difficult than the soldier can cope with, particularly when the patient's pain is greatly increased thereby. Moreover, we must train the small man how he can best transport the "man mountain" unassisted and under fire. The belt-under-armpit-and-dragging method should be taught. If a "buddy" be present the problem is simplified. Improvised litters and handcarriers of several types can be used then and should be taught. In all, proficiency must be achieved. Mere knowledge that these methods exist is insufficient.

To augment and facilitate proficiency in the seven basic first aid procedures which have been enumerated, three more are suggested. The first of these is *triage*. Some training in how to differentiate between patients to determine highest priority of need is necessary, or otherwise we will find persons bandaging simple lacerations while amputees lie nearby exsanguinating from lack of a tourniquet. Likewise, victims of sucking chest wounds or shock will expire from sheer inability to be as vocal in their need as a patient with a simple dislocated shoulder. Certainly we must acquaint each person with the urgency of removing unconscious individuals from the danger of asphyxiation by fire and smoke. Such simple and obvious emergencies to us as doctors may have no preferential need for treatment in the minds of non-professional persons. Unschooled they will likely respond first to the sight of multiple superficial lacerations as displaying the most blood or to the patient with the loudest fear-stricken screams.

Since burns are likely to comprise so many of our casualties in nuclear warfare, I would like to discuss their triage a bit further. But first, I must give you a classification. As we all know, prognosis in burn cases depends chiefly upon two important factors, the degree of burn sustained and the percentage of body surface affected. There should be no real difficulty in teaching soldiers to distinguish between 1st, 2nd, and 3rd degree burns as exemplified respectively by redness, blisters, or a charred appearance of the victim's skin. Likewise, the familiar chart of nines or multiples of nine (Fig. 1) lends itself well to a rapid calculation of total body coverage. Given these two basic determining factors and some such simple classification as shown in Table 1 the rest should come easily.

When reduced to these terms we see from the chart that we have really only one category of patients to be immediately concerned about: Those patients who have predominantly second degree burns covering 20% to 70% of their body surface, who can be saved

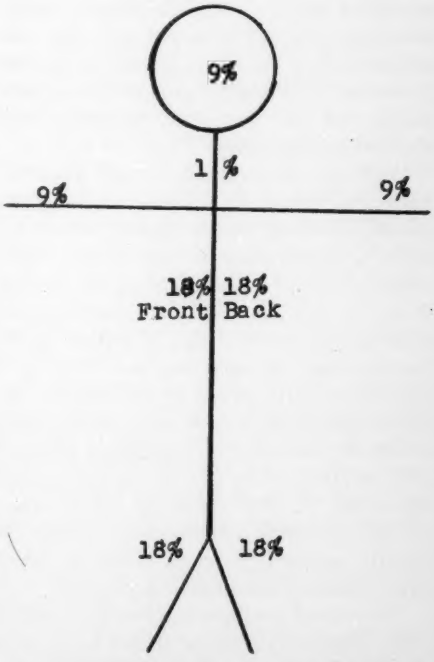

FIG. 1. Body surface percentages for burn calculation. Multiple values of "nine." (Actual values slightly modified for convenience.)

TABLE 1

Priority for Transportation	Category	Degree of Burn and Percent of Body surface
None	Hopelessly burned	3rd deg. >80%
I	Can be saved by vigorous treatment	2nd deg. 20%–70%.
II	No immediate danger	2nd deg. 10%–20%.
None	Ambulatory treatment only	1st deg. <10%
None	Self care	1st deg. < 5%

by vigorous treatment. First priority of transportation must be accorded them. Once these are cared for, those with second degree burns of 10% to 20% may be transported to a place of definitive treatment. The others are either hopelessly burned or have burns of such limited degree as to be inconsequential and, therefore, require no transportation. It would seem that we could reasonably expect to train persons to quickly screen out this Priority I group and save technicians the time and effort in their rescue work when they arrive.

With one more thought, I will leave the subject of triage. In a sense, we have the problem of triage already partially solved for us in a nuclear blast in that we have what might be termed *automatic triage* as we come from the epicenter out to the periphery. In drawing concentric circles of increasing diameter about the epicenter and knowing a few of the basic factors of the blast we can almost direct the rescue work to the circle where the victims of second degree burns of 20% to 70% will be found. The tremendous advantage of this automatic triage when dealing in countless numbers of casualties is readily apparent. Precious hours are saved from wasteful search and inspection.

The second auxiliary topic which I believe some elementary training should be given in is that of positioning of injured patients, or *patient posture*. Otherwise, we will find broken backs sitting up and thoracic injuries lying down; belly cases walking and fractured wrists on litters. It would be well also if we pointed out that all extensive burn cases will be litter cases because of imminent shock, so there will be no question in the mind of the person treating the victim. In this connection, I do not believe it is wise to teach soldiers the symptomatology of shock as we have done in the past since it is not our purpose to make absolute diagnosticians out of soldiers. It is better to tell them in what conditions shock usually occurs and to treat *all* such patients as though they were in shock. We will have better success in this approach with mass casualties. The prone position, blankets, and fluids are still good doctrine, with the addition of body tilted head down, if you like. The elevation of injured extremities to assist in hemostasis by gravity should also be taught.

Third and last, *psychological preparation* requires careful exposition to each individual. He should be schooled in the description of an area produced by a nuclear weapon, with its mass casualties, predominant injuries and terror potentials. He should be trained to steel himself against the panic which it is likely to create within and to pursue without fail the techniques which he has been taught in simple self aid and first aid. He should be taught that in the many acts of *doing* he will find the panacea for his own terror, in *giving* he will receive the greatest benefit. Unless we do this, our potential for self-aid and first aid, our only salvation in a future war, becomes a minus quantity.

What I have just delineated is a suggested basic course in self aid and first aid for soldiers. I say for soldiers, but they are now equally important for each and every civilian to know. Nuclear warfare will be directed against the entire population, not only the military forces. It is for this reason that there should be a carefully integrated program of first aid instruction between the military and civilian authorities. We should be directing earnest efforts to give self aid and first aid instruction beginning in our grammar schools. Our children should begin in the first grade to learn the basic procedures

of self aid and first aid to acquaint them with the stark realities of the age in which we live. By constant repetition and applicatory exercises, genuine proficiency may be developed. In the later grades and in high school specific first aid problems in which one of the several basic first aid procedures are applicable should be given in sufficient variety to maintain interest. Each period should be characterized by a portion of it devoted to the development of skill in the application of these first aid measures. Prizes could be given for those who excel in completing them in the shortest space of time. One hour once a week in both our grammar and high schools and also in the Armed Forces would give this subject the attention it *now* deserves and would give us soldiers well trained in first aid. Only with such a program can we begin to fortify ourselves against the medical emergencies of nuclear conflict.

And now, of what does the 5 hours of first aid training that we give present day soldiers consist? Let us study and analyze each subject in the light of the foregoing discussion and see if we can in any way justify such few moments in the entire life of the average citizen of the United States devoted to formal instruction in first aid; this, with full knowledge of impending international disaster. At the same time let us assess this training as to substance and essentiality.

In analyzing this program of instruction, I would like to apply a simple formula for readily classifying all subjects and actions. I call it the "three N's," and find that it helps me quickly extract the essential from the non-essential. These three N's are in this instance:

1. *Need* to know,
2. *Nice* to know,
3. "Nuts" to know.

I fully realize that the third "N" spiraled a very fine General to international fame. However, I do not feel that this is likely to occur twice in one generation, so have felt free to use it here. Possibly the additional usage will lead to its inclusion in the Army list of accepted terms which require definition.

Army Training Program Nr 21-114, for "male military personnel without prior service," cointains the following subjects in the five hours allocated to training in first aid. Subjected to the classification mentioned and further comments, these first aid topics are:

1. Use of the first aid packet.—This is "need to know" for the reasons already stated; but the item used should be replaced with an elastic bandage employing a heavy compress at one end to secure better hemostasis.

2. First aid for wounds and the control of bleeding.—This is "need to know" but should be simplified and broken down into its basic elements of tourniquet application and bandaging.

3. Prevention of shock.—This is "nice to know" but too complicated to teach. We should not expect to make diagnosticians out of non-medical persons. Instead, we should teach them what injuries shock occurs in and have them treat them always as though they were in shock. No harm will be done and many patients saved.

4. First aid for all types of burns.—This is "need to know." It should be taught that shock and dehydration occur in all extensive burns and such victims should be treated by prone posture, blankets and water with salt tablets. Elementary triage should be taught in order to select cases for priority of transportation and save time when medical assistance arrives.

5. Elementary and improvised dressings and bandages.—"Need to know," but should be made as simple as possible. Great proficiency should be developed.

6. First aid for fractures, dislocations, and sprains and the use of improvised splints and slings.—"Need to know," but should be made as simple as possible. Great proficiency should be developed.

7. First aid for special conditions such as:
   a. Foreign body in the eye.—"Nice to know." This condition is infrequent and minor, but may become common with

flying dust and debris occasioned by nuclear blasts.

b. Nose bleed.—"Nuts to know." Too infrequent and minor.

c. Poisons.—"Nuts to know" if we mean only poison ivy and similar afflictions to which this topic refers now. "Need to know" on limited scale if we expand to mean chemicals such as the incidental gases, oxidizers, and propellent fuels for rocket propulsion; then this should be taught to ordnance depot and anti-aircraft crews only.

d. Insect bites.—"Nuts to know" if we mean only bee stings, black widow spider bites, and the like. "Need to know" for troops in malarious, typhus, or scrub typhus areas although there are no strictly first aid measures for the insect vectors of these diseases, only preventive and definitive treatment measures. The use of chloroquine in malaria approaches a first aid measure.

e. Snake bites.—"Nice to know" on limited scale. Give troops special instructions only if in snake infested country.

f. Drowning.—"Need to know." This is such a universal accident that everyone should be familiar with its first aid treatment. In amphibious assault landings, though, there is not time for a "buddy" to administer treatment. This must be done by first echelon medical service, or not at all. Drowning also provides a convenient subject to stimulate the instruction in artificial respiration, and if for no other reason than this should be retained.

g. Electric shock.—"Nuts to know." Too rare to spend any time teaching this subject to every soldier. Has limited usefulness for signal and engineer troops and therefore "nice to know" for them. Should be taught only to them.

h. Heat exhaustion.

i. Heat stroke.—These two conditions are "nice to know" but relatively infrequent. First aid instruction in them should be limited to troops in tropical or semi-tropical areas and probably tank crews, ship crews and airplane crews.

j. Trench foot.—"Need to know." However, prevention and first aid treatment here are the same, just as in shock. *Emphasis should be placed on prevention.* Should be taught to all troops as a special subject when operating under cold weather conditions.

k. Frostbite.—"Need to know," but limited to troops in cold or mountainous areas. Special instructions should be given troops entering into winter warfare.

8. Artificial respiration.—"Need to know." Will have an ever increasing place in first aid with the mass casualties of nuclear warfare; also needed for chemical warfare. One and only one simple method should be taught and that the one which provides the largest exchange of air.

9. Manual carries of the sick and wounded. —"Need to know." This is a basic and essential subject in first aid which will find a multitude of opportunities for application in atomic warfare as already discussed.

In review, it would appear that present coverage of first aid is fairly comprehensive as to substance and essentiality. Only a few minor topics had to be relegated to the limbo of "nuts to know." It seems, then, that our chief constructive criticism would be in respect to the time allotted for first aid. Certainly, 5 hours is too little to devote to something which is so vital to our whole future national existence. My personal opinion is that we should give *one hour weekly* to this subject during the entire 29 weeks of basic combat training. This would be approximately six times as much as now.* In addition, we should make this one of the manda-

* Since the original presentation of this paper, the curriculum of first aid training for soldiers has been increased to 20 hours. Training of civilians still requires major augmentation and universal application. The Nation-wide cooperation of the American Red Cross with the public school system and parent-teacher's organizations may be the answer.

tory subjects for repetition at periodic intervals. Troop information and education instruction, the so-called TI&E lectures, which are handled in this fashion, are not nearly as important from a sheer survival standpoint as the subject we have just discussed, and yet they are repeated once weekly. It is recommended, therefore, that at least one hour of instruction monthly in first aid be given on this basis. The procedures taught should be agreed upon by both military and civil defense authorities and then fully integrated into the military and civilian training programs beginning in our grammar schools as I have already mentioned. Only in this way can we expect to meet the medical emergencies of the future.

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Give Your Students a Simulated Patient to Treat!

By

MAJOR SAMUEL L. CROOK, SR., MSC†

A detailed description of the technic of patient simulation taught at the Army Medical Service School, Europe

THE soldier sprawled in the grass had been hit by pieces of glass and a piece of two-by-four thrown by the blast wave. As the medical corpsman examined the patient, blood spurted from a small severed artery. Glass splinters protruded from his shoulder. A small piece of wood was inbedded in a penetrating wound. When the corpsman opened the patient's sleeve, he found a compound fracture of the humerus.

After emergency treatment had been applied, the patient stood up to critique the treatment he had received. The injured soldier was a simulated casualty in a class on emergency medical treatment.

The effectiveness of instruction in emergency medical treatment and patient care procedures is greatly increased when the student can see a wound or condition requiring treatment. The Army Medical Service has long recognized this and provides moulage sets of simulated wounds to be used in such instruction. Taking a cue from the British, the Army Medical Service School, Europe (AMSSE), adds make-up to its moulages to present a more realistic casualty to the student. The Army Medical Service School, Fort Sam Houston, Texas, and the 98th General Hospital, here in Europe, as well as others, use the technic with success.

The purpose of this paper is to describe the technic of make-up in such detail that all USAREUR medical units can employ it in their emergency medical training courses. The application of the make-up requires a relatively small expenditure of time and material and is amply compensated by the increase of understanding and the retention of instruction which results from its use.

The *make-up* is only a part of simulating a patient on whom to demonstrate the proper treatment of an injury or condition. It is essential that both the instructor and "patient" understand the physical and mental effects of the condition to be portrayed, as well as the treatment prescribed. Acting and staging must contribute to the over-all effect.

The *acting* required is not of a high order. The important thing is that the "patient" react realistically to the manner in which he is handled and treated. "Over-acting" must be avoided! To accomplish appropriate acting, one need only to brief the "patient" carefully as to the posture, gait, degree of pain, position of body parts, and degree of activity and consciousness to be simulated. It is preferable that a Medical Corps officer conduct this briefing. Changes in respiration, responsiveness to stimuli, and probable emotion should be carefully explained. Limitation of motion can be simulated by application of adhesive tape to control movement. The unit surgeon is an excellent consultant for this entire phase of the preparation.

Many conditions can be simulated by acting alone (shock, neuropsychiatric conditions, minor sprains and strains) coupled with an application of the basic make-up described herein. Other conditions will require the construction of artifacts, either on the demonstrator, or to be applied to the demonstrator.

Staging needs detailed attention from the instructor. Appropriate surroundings play an important part in adding to realism. The simulated casualty is usually introduced to the class after an hypothetical incident which causes the condition portrayed. "Props" must be natural and as true to life as possible. For example, clothing should be ap-

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propriate. Clean, starched field clothing on a battle casualty is a rare sight. Profuse hemorrhage invariably soils clothing and, frequently the litter upon which the patient is transported. A supply of old clothing that can be cut, torn, burned, and/or stained is necessary.

Materials and Equipment

Procurement of Available Items. The basic materials used in casualty simulation are listed in Table 1. Excellent simulations can be effected using only the supplies listed as basic requirements, which are available through normal supply channels, military pharmacies and mess facilities.

Even better results are obtained from supplementing the basic items with those listed in Table 2. These items are easily obtained through local procurement from civilian theatrical supply stores or parfumeries. With an expenditure of approximately $20, one hundred simulated patients can be made up.

The local slaughter house is the source for the bone and animal viscera, which is usually given at no cost.

The cold cream prepared and stocked by hospital pharmacies is recommended over commercial preparations, since cream used for this purpose should have a high wax content.

"Plasticine" is the preferred brand of modeling compound. Other compounds used have been unsatisfactory because they were too oily, would not adhere to the skin, lacked body, had objectionable odors or were not available in the desired colors. "Plasticine" costs 33 cents per pound and can be purchased in almost all toy stores.

Preparation of Unavailable Items. Compounding the items which are not available as finished products is a reasonably simple task. Normally five colors of modeling compound are combined to produce the basic "skin" shade. To match the skin coloring of the demonstrator it may be necessary to add small amounts of one or more of the basic color ingredients.

False Tissue. To prepare the basic "skin" shade, knead the following colors of modeling compounds in the proportions shown: Flesh, 5 parts; Stone, 5 parts; Terra cotta, 1 part; White, 3 parts; Yellow, 1 part. Store in an airtight container. Compound that is too dry may be thinned by mixing with a small amount of mineral oil. Knead the modeling compound well before applying it to a simulated casualty. Avoid using excessive amounts to preclude unnatural bulkiness of the false tissue. A rule of thumb is to determine the amount necessary and then use half of that amount.

Simulated Blood. Thoroughly mix together.

	grams
Certified food coloring, FD and C Red Nr 1	10
Certified food coloring, FD and C Red Nr 2	10
Powdered caramel coloring	1
Methyl cellulose (1500 centipoises)	12
Sodium benzoate	4

Completely dissolve the mixture in about one-half gallon of hot water. Add sufficient cold water to make one full gallon of mix-

Table 1

Basic Materials and Equipment

Items available through normal supply channels	
Applicator sticks	Muslin
Candles	Nr 00 gelatin capsules
Class X clothing	Orangewood sticks
Collodion, flexible USP	Petrolatum, USP
Cotton	Rubber bulbs
Cork	Rubber cement
Ether	Salvage blankets
False teeth, individual	Toilet tissue (yellow or pink)
Glycerine	Tongue depressors
Litters	Transfusion bags
Masking tape	Wound moulage sets
Matches	
Items available through most military pharmacies	
Bicarbonate of soda	Powdered caramel coloring
Cold cream	Powdered charcoal
Gum arabic	Sodium benzoate
Methyl cellulose	Tartaric acid powder
Items available through most mess facilities	
Certified food coloring, FD and C Red No. 1	
Certified food coloring, FD and C Red No. 2	
Corn starch	
Granulated sugar	
Oatmeal	

TABLE 2

SUPPLEMENTAL MATERIALS AND EQUIPMENT

Items available through local procurement	
Acetate shreds	Grease paint sticks (¾" diameter)
Animal viscera	Carmine I—Orange-red
Bone fragments	Carmine III—Dark red
Camel's hair brushes	Tint Nr 1½—Flesh
	Tint Nr 5—Yellow
Face powder (natural or neutral)	Tint Nr 9—Red-brown
False hair (assorted colors)	Model airplane cement
	Modeling compound
Grease paint liners (⅜" diameter)	Flesh
Black	Stone
Blue-green	Terra cotta
Dark gold	White
Light gray	Yellow
Medium blue	Theatrical make-up
White	Wood splinters

ture. If the simulated blood is to be poured into a laceration or an open wound, add glycerine (1 pint to 1 quart of simulated blood) and a thin mixture of cornstarch to produce a more realistic appearance.

Effervescent Capsules. Mix together:

	ounces
Tartaric acid powder	1
Bicarbonate of soda	1
Granulated sugar	1½

Fill Nr 00 gelatin capsules with mixture. Have demonstrator insert one or two capsules in mouth to produce frothing effect. If bloody froth is desired, add a small amount of certified food coloring, FD or C Red Nr 1, to the mixture prior to filling the capsules.

Raw Flesh Paste. Melt together slowly one-half stick of Carmine I grease paint with one ounce of Petrolatum, USP.

Congealed Blood Paste. Melt together slowly one-half stick of Carmine III grease paint with one ounce of Petrolatum, USP.

The general order of work is to prepare the moulages and other artifacts in advance. When these are ready, apply the basic make-up (or have the demonstrator apply it to himself), then place in position the completed moulages or artifacts. Complete the area of injury by overlaying the artifact with appropriate make-up. Touch up the basic make-up, powder all grease paint to reduce shine, add blood, sweat, and/or vomitus as appropriate, and clothe the demonstrator realistically.

Caution: In preparing simulated casualties *never* place anything into the eyes or the body orifices except blood simulators which may be placed in the mouth.

DETAILED INSTRUCTIONS

The first material used in actually preparing the "patient" is cold cream. Small quantities of cold cream should be applied to the skin and *gently* smoothed over the entire area to be made up. *Gently* wipe off surplus cream until only a thin film remains. ("Gently" is emphasized since more than slight pressure will stimulate the area and increase natural coloring.) This allows a smooth application of grease paint and enables the demonstrator to remove the make-up without difficulty.

Basic Make-up. Since some degree of general physiological change accompanies most traumatic injuries, it may be necessary to devote more time and attention to general signs than to the wound itself. The basic make-up will vary with the degree of injury but should in no case appear to be a "mask." As in all phases of casualty simulation, practice is required to produce the desired effect. The basic make-up is applied as follows:

After coating the exposed surface (face, neck, hands) with a thin film of cold cream, apply the basic color (yellow) by drawing the stick over the large areas. With the finger tips, smooth the color until it appears as a thin even layer. Special care must be taken to tone down the naturally healthy appearance of the more highly colored parts. Some operators may find it advisable to add small amounts of grease paint by drawing finger tips over the stick and applying it to

the desired area after the first wide coloring has been applied. The light gray liner is used to accentuate the natural facial lines and to further tone down the eyes, cheeks, and ears. Have the "patient" frown and place a trace of gray in the natural lines. This is fused with the basic color by a gentle patting motion of the finger. Now, using the gray liner, draw a half-moon under each eye and gently break down the hard edges of color to form a V. A very thin line of red at the base of the eyelashes gives the appearance of going without sleep. The rim and lobe of the ear should have a tinge of gray. Persons with dark skins require much more gray than yellow in most areas. Accent the facial lines in these cases by using a blue-green liner.

Fingernails are covered with a very thin film of blue. A little gray is rubbed under the nails. Female "patients" wearing nail polish and lip rouge need no nail or lip make-up other than a thin line of yellow around the nails to accentuate the poiish.

Prior to dusting with powder, varying degrees of shock may be depicted by the simple addition of medium blue to the eyelids, lower lip, ear lobe, finger nails and prominent veins, and blue-green under the eyes and on the upper lip. On the lips the blue should be allowed to overlay the skin slightly.

Over the grease paint pat a light coating of "Natural" powder to remove the shine. Powder should be applied very sparingly and evenly. This completes the basic make-up.

Using a mixture of glycerine and water (half and half) apply beads of moisture to the forehead and over the upper lip by patting it on with a pledget of cotton soaked in the mixture.

Burns. These injuries are simulated by using various reds, light and dark. Even shading and blending of these colors will produce "superficial burns." Shave off any hair and apply the darker reds to the center of the area and the lighter reads to the periphery. Edema is portrayed by modeling compound applied according to the directions given subsequently. The compound is tinted and colored in the same manner as the demonstrator's skin.

Blisters are made by placing mounds of petrolatum jelly on the desired site. These are sealed with yellow or pink toilet tissue and collodion to give the effect of second degree burns. Ashes and black grease paint will add to the effect. A solution of model airplane cement and ether also can be sprayed over petrolatum jelly to simulate blisters.

This latter solution is used to provide "sloughing skin" when third degree burns are to be shown. After shaving the affected area, apply congealed blood paste to the zone of the third degree burn. Make up the periphery as for second and first degree burns. Spray the cement-ether solution over the grease paint, allow it to dry, and then peel it down with a blunt stick. Allow the irregular shreds to hang down. Model the exposed congealed blood paste to resemble muscle fibers by stroking the surface of the paste with a small camel's hair bursh. Add blisters if desired. Lightly dust powdered charcoal over the area and touch some edges of the shreds of "skin" with black liner.

To properly "stage" the burn injury, edges of holes in clothing are charred with a candle flame.

Bruises. A contusion is produced by applying red-brown to the desired area and spotting it with medium blue. This injury may be "aged" by increasing the amount of blue and blending in small amounts of dark gold.

Abrasions. These injuries are simulated by applying rubber cement in streaks. When this dries, it is rubbed up gently to produce an abraded surface. Streaks of raw flesh paste are made in thin lines over the rubber cement. Lightly powder and then pour a small amount of thick liquid blood mixture on the "wound." This mixture should be allowed to flow naturally, or, for a small abrasion, it should be patted on with cotton to form beads.

Edema and Open Wounds. False tissue to portray edema and the evulsion of tissue

around an open wound is constructed of modeling compound. Match the proper amount of modeling material to the skin color; knead it until it is soft and pliable; work it into the approximate shape desired and, with an orangewood stick, modeling tool, or knife, fasten it to the selected body surface. If the false tissue is to be applied to a soft tissue area, it is recommended that the "wound" be constructed on cloth-backed masking tape which may be later applied to the body surface. Try not to extend the area to be made up, and keep the false tissue area confined. Next, smooth out the margins of the modeling compound until it blends with the natural skin and mold the center until it conforms to the natural contour of the body area. When this has been accomplished, apply a thin coat of cold cream and cover with grease paint until it is completely disguised.

The next stage is to make a wound which will be in character with the casualty agent. This is usually done with the beveled end of an orangewood stick or a modeling tool. Cut into the modeling compound to make the size and shape of wound desired. *Do not cut through the compound for then it will peel off of its own weight.* To give depth to the wound insert a small amount of congealed blood paste for incised wounds, or cotton saturated with simulated blood for lacerations, into the base of the open wound.

Next apply a shading of raw flesh paste to the inner edge and lips of the wound to give the appearance of freshly damaged flesh. Be careful not to go outside the edges of the wound with blood or flesh paste. Touch any uncovered edges with black liner. If the addition of fatty tissue is indicated, light traces of dark gold grease paint may be added. All that remains is the application of the proper amount of liquid simulated blood.

Compound Fractures. Modeling compound is used and made up as described above. Mold the false tissue over a small wedge of cork inserted between the skin and the plasticine. After forming the wound, insert an appropriately sized splinter of animal bone so that it forms an extension of the deformity simulated by the wedge of cork. Proceed to complete the make-up.

Other Wounds. Traumatic amputation, sucking wounds of the chest, abdominal wounds with exposed viscera, et al., are simulated by constructing the wound on a standard moulage. Make up the moulage as though it were the demonstrator. Add bone, viscera, and the like, to the moulage by fastening with masking tape and collodion. Cover exposed tape with modeling compound.

Wounds for which no moulage exists and face wounds can be constructed on pads of muslin or cloth-backed masking tape. Head and face moulages are unsatisfactory. The muslin pads can be made to adhere by using gum arabic. Circular pads make an excellent base for head wounds, but they must have false hair appropriately matched and placed around the simulated wound.

Bleeding. Arterial bleeding is reproduced by leading tubing to the desired site of the bleeding. The end of the tubing must be hidden in the simulated wound. The opposite end of the tubing is connected to a hidden rubber syringe bulb placed where the demonstrator can squeeze it spasmodically. The bulb is filled with liquid blood mixture.

Venous bleeding is simulated in a like manner except for the reservoir. Substitute a plastic transfusion bag for the rubber bulb and place it where the demonstrator can apply a steady gentle pressure.

The entire system of tubing must be completely filled with the blood mixture to function properly. A more natural effect is realized if no attempt is made to guide the external flow of the blood mixture. Let it run naturally.

Other Staging. Debris, splinters of wood, and similar items can be inserted in modeling compound as required. *Real glass must never be used.* Thick acetate gives the same effect without risk to the demonstrator. Vomitus is simulated by smearing cold cooked oatmeal on the demonstrator and his clothing. Frothing is accomplished by dissolving an effervescent capsule in the mouth. Wounds involving a blood froth are simu-

lated by placing or emptying an effervescent capsule in the wound and letting it react with the liquid blood mixture.

SUMMARY

Anyone can make up "patients." The trick is to mentally picture the causes of the physiological condition to be portrayed and then make up the demonstrator accordingly. In shock, for instance, the change of color is due to circulatory failure. This removes that part of skin tone normally contributed by underlying blood; therefore, the color of the skin itself is accentuated. Bearing this in mind increases the effectiveness of your instruction.

Give your students a simulated patient to treat!

* * *

[The author is indebted to First Lieutenant Jeanette F. Buczynski, ANC, Sergeant First Class Arthur D. Bradley, and Specialist Four Klaus P. Lange, of the faculty of the Army Medical Service School, Europe; and to Captain George Caras, MSC, formerly Commanding Officer, 26th Med Det (Illustration) for preparing the accompanying illustrations.]

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Tantalum Mesh in Hernia Repair

By
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(With seven illustrations)

MANY methods of reinforcing or replacing the abdominal wall have been utilized in hernia repair. These include the use of autogenous fascia, animal fascia, dermal strips and sheets, transplants from the rectus sheath and external oblique, and silver and vitallium plates. The fascia lata strips of Gallie and LeMesurier have enjoyed the widest use.

Tantalum mesh surgery is not new though few reports have appeared in the literature of the past ten years.

Tantalum is an element. It has an atomic number of 73 and an atomic weight of 180.8. Most of the metals used in surgery are mixtures or alloys. Tantalum is as strong as steel and nearly as impervious as glass. Its resistance to corrosive action is high. It is easily rolled into strands of .003 to .007 inch diameter for use as sutures or mesh. Tantalum can be autoclaved many times at high temperatures without structural fatigue.

Tantalum mesh is supplied in sheets of six by twelve inches. Though it is often described as tantalum gauze it has none of the characteristics of gauze. The sheets are made by weaving tantalum wire of .003 inch diameter. Each strand is exactly ½ mm. apart and each interspace is exactly ½ mm. square. When the mesh is held to the light it is nearly invisible and its filmy nature is apparent.

The application of tantalum mesh to surgery is in the repair of the complicated hernia and defects of the abdominal wall. (Fig. 1) It is pliable, possesses amazing tensile strength despite its filmy nature, and is remarkably inert in body tissue. Instead of acting as a foreign body it is rapidly invaded by connective tissue and soon becomes another layer of the body. Its tensile strength is greatly enhanced by the interlacing fibrils much as concrete is strengthened by the inclusion of rods and screens. Fragmentation of the mesh occurs after six months. (Fig. 2) This does not impair its strength since it is firmly encased in a fibrous tissue envelope of considerable thickness.

Defects of the Abdominal Wall

Defects in the abdominal wall are encountered after radical surgery, trauma, or large herniations of abdominal contents. The major defect is usually in the transversalis and endo-abdominal fascias which are often too rigid for routine closure.

The layers of the defect are dissected and prepared for closure. Partial layer closure without tension is advisable to narrow the defect. The peritoneum should be closed whenever possible. When this is not possible the tantalum mesh is anchored to the fascial edges of the defect with interrupted sutures of 3-0 silk about one fourth inch apart. (Fig. 3) Exposure of abdominal contents to tanta-

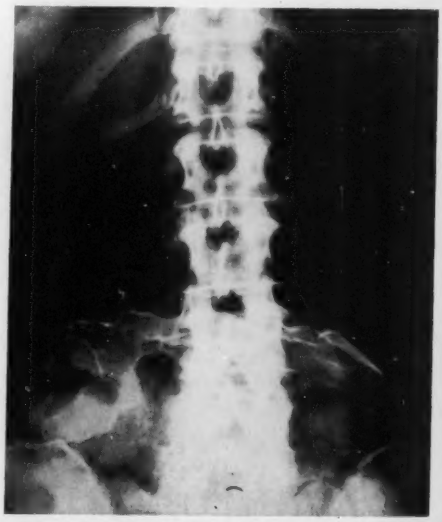

Fig. 1. Tantalum mesh repair of a large ventral hernia shown radiographically.

lum mesh was well tolerated by two patients. (Table I, Cases 2 and 5) Tantalum wire of .007 inch gauge can be used as a suture material. Tantalum wire is not as facile or maneuverable as silk especially in placing and tying sutures.

The mesh is sutured into place without tension but the sheet should be smooth and secure. In vital areas the edges should be turned or molded to a smooth contour. Accurate skin closure is essential. This can be accomplished in most cases by wide mobilization of the flaps.

Drainage is necessary only if wide exposure of tissue has been carried out. Drainage is not a significant factor in tantalum mesh surgery.

Post-operatively the abdominal wall regains its tone and no notable weakness or softness is detected. Mobility of the trunk is maintained. No unusual symptoms are encountered in these patients.

Complicated Inguinal Hernias

In the complicated inguinal hernia the problems are replacement of the transversalis fascia, closure of the trihedral and interligamentous space and transitional angle, reconstruction of the internal ring, and strengthening of the trilaminar wall. (Fig. 4)

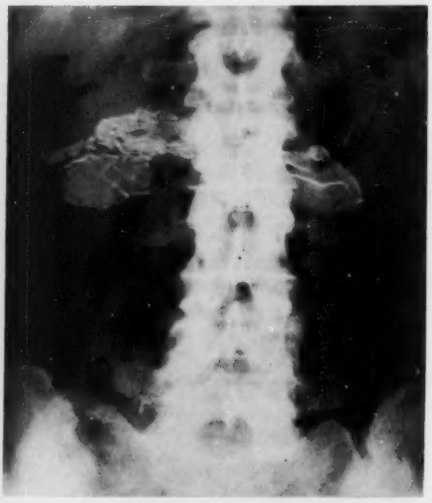

Fig. 2. Radiographic evidence of disintegration of tantalum mesh after six months.

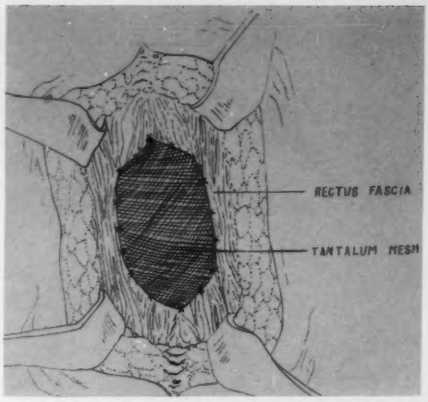

Fig. 3. Repair of a ventral hernia with tantalum mesh.

Tantalum mesh is easily cut and custom fit to any inguinal defect. An opening is fashioned for the cord and the metallic edge is molded for smoothness.

In this type of repair no attempt is made to approximate the transversalis fascia or suture the trilaminar wall to the inguinal ligament.

The first line of sutures anchors the mesh to the inguinal ligament and the ligament of Cooper. This obliterates the interligamentous space and the femoral canal. (Fig. 5) It usually requires three interrupted sutures of silk or wire to carry out this maneuver. These sutures are through and through sutures going through the ligament of Cooper and the inquinal ligament at the same time. These sutures are tied firmly but not tightly so that the interligamentous space is obliterated not by force but by the tantalum mesh. It is easier to put all three sutures into place, replace the needle on each suture, and then sew through the edge of the tantalum mesh while your assistant holds it in one hand. In this step of the operation the external iliac vessels are retracted by the forefinger of the operator or by a finger retractor held by an assistant.

The second line of sutures anchors the mesh to the fascial component of the tri-

TABLE 1

No.	Patient	Type of Hernia	Type of Repair	Results
1.	E. M. Female 55	Large ventral hernia. Defect 10 inches in diameter	Tantalum mesh 2×6 inches	Repair firm, 4 years
2.	P. E. Male 50	Right rectus incisional hernia. Defect 6 inches square	Tantalum mesh 6×6 inches	Two inch bulge, upper end, above mesh
3.	N. R. Female 64	Right rectus incisional hernia. Defect 6 inches in diameter	Mesh 4×6 inches	Repair firm, 3 years
4.	A. R. Male 63	Multiple interstitial hernia upper abdomen	Closure of fascia. Reinforced by mesh 6×6 inches	Satisfactory, 2 years
5.	C. D. Male 69	Resection of liver and abdominal wall for recurrent carcinoma	Defect of peritoneum and fascia. Mesh 3×5 inches	Drainage 2 weeks, healing secure, 6 months; death
6.	J. D. Male 50	Right direct inguinal hernia	Mesh 2 inches in diameter	Wall secure, 1 year
7.	J. C. Male 50	Pantaloon hernia. Right	Mesh 2 inches in diameter	Early postoperative
8.	T. B. Male 59	Recurrent right direct inguinal hernia	Mesh 3 inches in diameter	Satisfactory, 2½ years
9.	H. B. Male 51	Right direct inguinal hernia	Mesh 2 inches in diameter	Satisfactory, 2 years
10.	J. C. Male 49	Bilateral pantaloon hernia	Bilateral repair mesh 2 inches in diameter	Satisfactory, 6 months
11.	L. C. Male 30	Recurrent right direct inguinal hernia third repair	Mesh 3 inches in diameter	Satisfactory, 8 months
12.	D. E. Male 55	Left direct inguinal hernia	Mesh 2½ inches in diameter	Satisfactory, 1 year
13.	T. J. Male 41	Left direct inguinal hernia	Mesh 2 inches in diameter	Satisfactory, 9 months
14.	H. T. Male 42	Recurrent right direct and indirect inguinal hernia	Mesh 2 inches in diameter	Satisfactory, 2 years

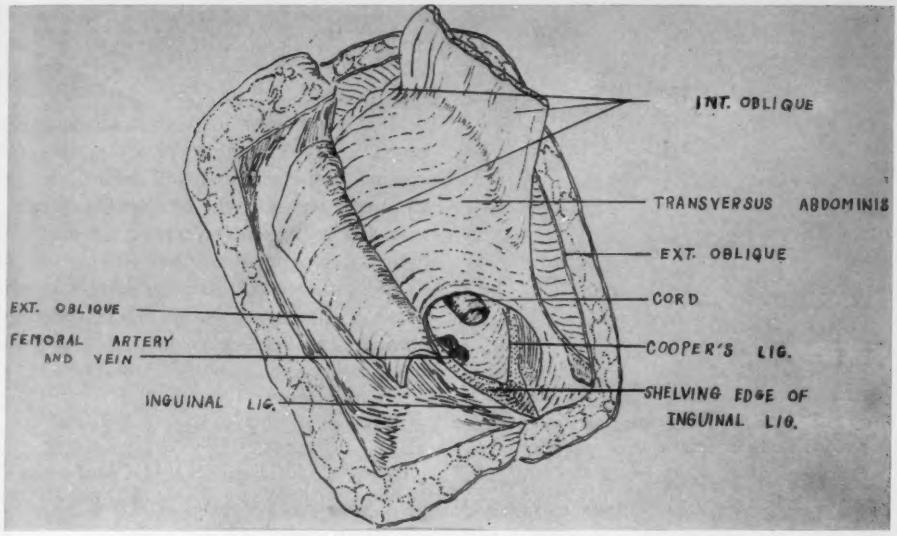

FIG. 4. Anatomy of the tri-hedral space.

laminar wall. (Fig. 6) This component is exposed by dissecting back the upper flap of the external oblique. A tough fascial floor will be uncovered which consists of internal oblique fibers and rectus sheath. The rectus sheath is a much stronger and thicker layer than the internal oblique and can often be used to advantage.

The third line of sutures is designed to obliterate the transitional space. (Fig. 6) The mesh is molded around the external iliac vessels and sutured to the inguinal ligament anterior to the vessels and extending laterally beyond the region of the internal ring. In this maneuver the mesh is brought from a deep to a superficial position. Tantalum maintains its molded shape and serves ideally in isolating the vessels without encroachment. The mesh will not disturb the vessels if care is taken to leave an adequate cuff of tissue around the vessels.

The fourth line of sutures is used to anchor the mesh around the cord and create a new ring. (Fig. 6) Since the cord will oc-

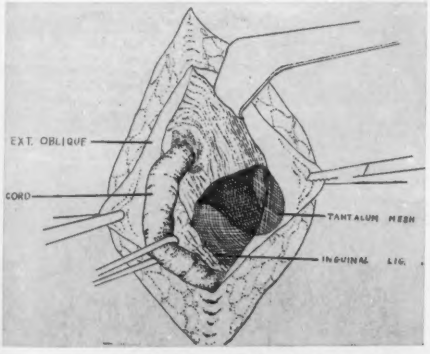

FIG. 5. The first line of sutures obliterates the inter-ligamentous space and the femoral canal.

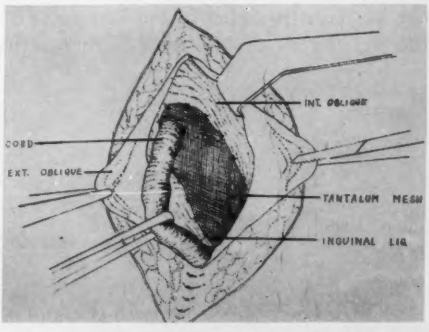

FIG. 6. The second line of sutures anchors the mesh to the fascial component of the trilaminar wall. The third line of sutures obliterates the transitional space.

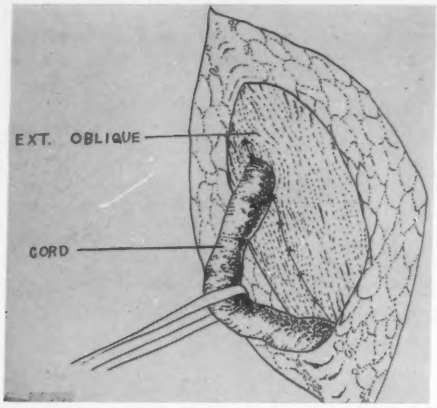

FIG. 7. The cord is transplanted to a subcutaneous position as the external oblique fascia is closed.

cupy a subcutaneous position the internal and external rings will become a single ring.

The last step in the procedure is closure of the external oblique fascia under the cord, placing the cord in a subcutaneous position. (Fig. 7)

OTHER USES OF TANTALUM MESH

The problem of closing rigid openings is greatly simplified by the use of tantalum mesh. It has been used successfully to close the obturator canal and openings in the skull. It has been used to cover large openings in the thorax. It deserves consideration for creating a stronger floor after a Miles abdomino-perineal resection though no record of its use has been recorded in the literature. Its use in surgery of the diaphragm and its openings deserves experimental and clinical study.

SUMMARY

Many ingenious methods and materials have been used in the repair of complicated inguinal and abdominal wall defects. Tantalum mesh possesses the advantages of inertness, flexibility, and great strength acquired by invasion of its interstices with connective tissue. Its eventual disintegration has been illustrated radiographically. A method of application has been described.

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The Repair of Hiatus Hernia with Tantalum Mesh

By

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(With three illustrations)

TANTALUM mesh has been used to close obturator hernias, femoral hernias, vertral hernias, openings in the chest and skull, but this is the first report describing its use in hiatus hernias.

Hiatus hernias are notoriously difficult to close and notoriously prone to recurrence, by either the abdominal or thoracic approach. The recurrence rate is 10-20 per cent. An acquaintance of mine described the diaphragm as a large blotter.

Since it is not uncommon to find hiatus hernia during abdominal operations, an easier and quicker method of repair seems desirable. I elected to use tantalum mesh in one case which is described below. (Fig. 1)

Method

A midline incision is made extending from the umbilicus to the left of the ensiform cartilage.

The stomach is reduced and held under tension by the first assistant. The left lobe of the liver may be retraced if it interferes with exposure of the hiatus. The peritoneum over the esophagus is cut transversely and a finger is swept around the esophagus. No further dissection of the hernia components is done. An occasional bleeder is found in the

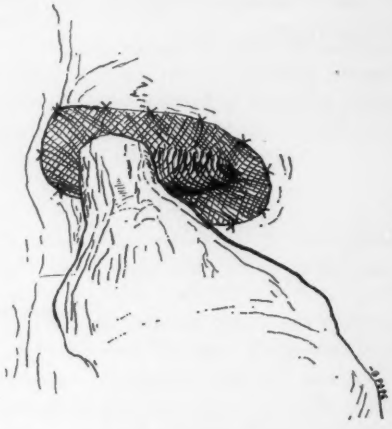

Fig. 2. Repair of Hiatus Hernia by means of Tantalum Mesh.

Fig. 1. Hiatus hernia or para-esophageal hernia.

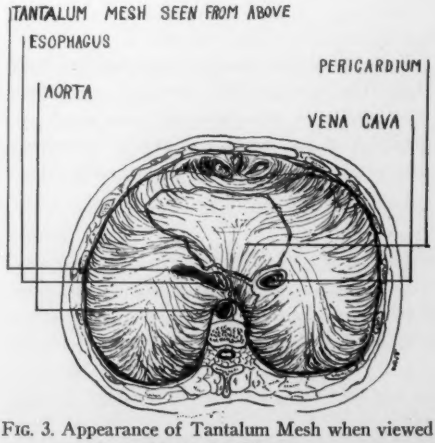

Fig. 3. Appearance of Tantalum Mesh when viewed from Above the Diaphragm.

hepato-gastric ligament. A piece of mesh is cut to the size of the lesion and fitted around the esophagus. The mid-portion of the mesh is actually molded into the defect so that there is some cupping of the mesh. (Fig. 2) The edges are sutured to the diaphragm with interrupted sutures of 3-0 silk or braided tantalum wire. Tantalum wire is not as satisfactory as silk because it is harder to tie and has a tendency to break when twisting is exerted. Braided tantalum is better, but it too is sensitive to torque (Fig. 2). In Figure 3 the mesh is shown as it appears from above the diaphragm.

SUMMARY

A new method of repairing hiatus hernias is shown. It deserves further laboratory and clinical appraisal.

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"We shall not be serving mankind well if we become obsessed with just the business of putting new satellites into orbit—so obsessed that we overlook the fact that we have some real problems left right here on earth. We must put new ideas—and more of them into orbit. And we must use every resource at our command to see that people everywhere achieve greater understanding of each other before it is too late."—PRESIDENT EISENHOWER.

The Proven Precepts of Inguinal Hernia Repair

By

DAVID WYATT AIKEN, M.D.†

SURGICAL repair of inguinal hernia is regarded by many surgeons as a simple procedure, and as such is unfortunately an underrated one. If it were true that this operation is easy, and the results uniformly good, there could be no need for further writing on the subject. The fact that this supposition is not necessarily true prompts further assessment of the procedure. Regrettably, frequent violations of sound surgical technique are occurring. While I have seen and repaired the results of some of these errors committed by surgeons who were my colleagues and subordinates, I have usually been unable to dispel their conviction that repair of inguinal hernia is, in their hands, a simple and fully effective procedure.

Sound surgical technique for inguinal hernia repair has to be drawn from varied sources, none of which provide the last word on this subject. It is the intent to record what I believe to be the proven precepts of inguinal hernia repair, with limited discussion. These precepts have been personally tested in over 200 inguinal hernia repairs, and in several hundred additional hernia operations I have supervised while assisting subordinate surgeons, during a four and a half year period as Chief of General Surgery in U. S. Air Force hospitals.

Circumstances of military service precluded adequate follow-up of these cases. This factor, which often prevails in civilian practice as well, makes it difficult for surgeons to profit from their experiences or to set aside their overconfidence and eagerness to undertake surgery for hernia.

What might almost be called the conclusion to the 70-year evolution of modern surgical thought on the repair of inguinal hernia has been written by Koontz.[1] It is difficult to appreciate what a baffling, seemingly impossible problem inguinal hernia was before the days of Bassini* and Halsted.* The subsequent contributions of Bloodgood*, A. H. Ferguson*, Gallie*, Lotheissen*, McArthur*, La Roque*, and McVay and Anson* are generally understood. Many other surgeons have contributed to the precepts here presented.

It is by no means intended to convey the impression that all experienced surgeons agree with the following precepts. Rather, their usefulness lies in their availability for well-judged, selective application.

PRECEPTS

1. *Make the operation fit the patient, don't try to make the patient fit the operation.*

2. *All conventional types of repair,* including Halsted, Bassini, Ferguson, Gallie, McArthur, Cooper's ligament and use of tantalum gauze, *can be successfully applied, within reasonable limitations, in adults.* There is no "one best method."

3. *In small and medium sized indirect inguinal hernias, the Bassini position of the cord,* between internal and external oblique layers, *is most widely used and favored.*

4. *In large (scrotal) indirect inguinal hernias and in direct inguinal hernias, the Halsted (subcutaneous) position of the cord is most widely used and favored.* In the United States in the last twenty years, this cord position has gained steadily in popularity while use of the Ferguson position has declined.

5. *The Halsted position of the cord provides worthwhile insurance against direct recurrence, which has been the most common type of recurrence after an indirect inguinal hernia repair.* This repair permits tightest closure of the lower end of the in-

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* Original references may be found in Koontz (1).

guinal canal, and union of internal and external oblique layers.

6. *The transversalis fascia, through which the sac protrudes, should be closed as a separate layer.* This precept is disregarded by those who believe a "single-layer repair" of the inguinal canal (conjoined tendon to inguinal ligament) suffices for a "simple routine hernia." Even if the cord is left in the Ferguson position, it should be lifted from its bed to permit closure of the transversalis fascia first. The edge of the inguinal ligament (or Cooper's ligament, if preferred), is usually included in this layer.

7. *When the transversalis fascia is very thin or absent, an additional layer should be created* (two layers of conjoined tendon, rectus sheath flap, relaxing rectus incision, fascial strips, external oblique flap to rectus sheath, or tantalum gauze).

8. *A single-layer closure of the "floor" of the inguinal canal invites a direct recurrence, even where there was no direct weakness initially.* The single layer becomes a tense sheet of tissue in which *only one stitch* has to loosen, break, or dehisce to allow mobile properitoneal fat, poorly restrained by loose transversalis fascia, to protrude. This is the most common cause of direct recurrence after indirect inguinal hernia repairs, and is characteristic of inadequately trained or unsupervised operators. In contrast, one senior surgeon of my acquaintance, who claimed to have no direct recurrences, repairs the inguinal canal routinely with four layers of wire sutures in small bites of transversus and internal oblique muscles to Poupart's ligament and adjacent external oblique fascia.

9. *Rather than do a single-layer repair of the "floor" of the inguinal canal, a surgeon would do as well with simple excision of the sac minus a plastic repair.* Except in children and infants, this is the least favored of procedures used today and is a poor one.

10. *The second layer in plastic repair of the inguinal canal should employ conjoined tendon* (usually neither "conjoined" nor "tendon") *sutured to the inguinal ligament or to Cooper's ligament, regardless of the cord position chosen.* The medial suture should be at periosteum in the vicinity of the pubic spine. All sutures in this layer should be tied with three knots with just enough firmness short of risking necrosis, and the ends cut sufficiently long (⅛") to prevent untying. A third layer, similarly fashioned, may be appropriate.

11. *The best procedure for infants and children is not agreed on.* Those of us who do no more than ligate the sac may be surprised to learn that among Koontz's correspondents, advocates of this procedure were slightly outnumbered by those who either close the transversalis fascia behind the cord or attach the conjoined tendon to Poupart's ligament over the cord (Ferguson). Only long-term follow-up studies will resolve this issue.

12. *Cooper's ligament repair of inguinal hernia is subject to pitfalls and criticism.* Now finding its chief indication in cases where there is a femoral defect, the operation is used routinely by a small minority of experienced surgeons.[1] The procedure disrupts the tissues in Hesselbach's triangle although these tissues are often strong. It usually involves excessive tension in the initial layer and endangers the femoral vessels and aberrant branches if done conscientiously. Recurrence occurs at the critical angle (trihedral angle), proceeds medially under the inguinal ligament, and can be very difficult to diagnose and repair. The perplexity of insuring integrity of this repair is attested by the multiplicity of methods which have been devised[2] to deal with the trihedral angle.

13. *The value of a relaxing rectus incision should not be overlooked* whenever excessive tension is created in repair of the inguinal canal.

14. *Firm union of structures used in plastic repair of the inguinal canal requires that all extraneous tissue be removed first,* including areolar and adipose tissue and cremaster muscle. A common mistake is failure to remove cremaster because of a desire to avoid cord hematoma.

15. *Meticulous hemostasis in the sper-*

matic cord is essential. Ligation of very small bleeders there should be done as they are encountered, and not postponed. Inadequate hemostasis, rather than either pampiniform thrombosis, too tight an internal ring, or excessive retraction at the lower end of the wound, is the usual cause of a large, firm cord postoperatively. Although I close the internal ring very tightly and have at times noted skin ecchymosis after prolonged retraction, this complication of cord hematoma has not yet been encountered in my personal cases. The discreet use of a small drain in selected cases has undoubtedly helped in its avoidance.

16. *Palpation of the floor of the inguinal canal and of the femoral canal from within should never be omitted* both with fingers and with a probing instrument used gently when the peritoneal cavity has been opened (which it always should be). Failure to do so may result in an inadequate operation followed by the necessity of re-operation.

17. *In "high" closure of the neck of a resected indirect sac, it is often convenient to grasp the neck with a clamp and twist it four or five times.* Surrounding peritoneum is thus pulled inward, permitting the highest possible placement of a transfixed-ligature. Properly done, there is no danger of catching bowel in the suture. This method, whose origin is not clear, but which I was taught by Dr. R. H. Smithwick, is not applicable in sliding hernias; there, one wall of the sac is, of course, absent.

18. *Higher transposition of the ligated stump of the indirect sac* should be included in the surgeon's "bag of tricks," for use in certain cases. Each end of the tied transfixed-ligature is threaded on a large curved needle, which is passed backwards from within outward, through the transversus and internal oblique muscles three to four centimeters above the internal ring. The ends are then tied. This transposition prevents the stump of the sac from serving as a wedge for recurrence at the internal ring.

19. *The size of a large cord should be reduced* before closing the internal ring, by removing cremaster and all fatty tissues.

20. *The internal ring should be closed tightly,* admitting less than the tip of the fifth finger. Postoperative swelling of the cord should not be blamed on this technique. Atrophy of the testicle from impairment of circulation is believed to be rare and has to be accepted as a calculated risk. Observance of this precept is more important than choice of cord position (Bassini vs Halsted). The use of sutures lateral to the internal ring from transversalis fascia and muscle to inguinal ligament is assumed. For effective placement of these stitches it is often advisable first to separate muscle from part of its origin at the inguinal ligament for two centimeters or so, lateral to the internal ring.

21. To further obliterate the internal ring, *it is sometimes helpful to separate the vas from the vascular elements and place one stitch from the arching muscle and fascia to the inguinal ligament in the hiatus thus formed.* In addition to virtually obliterating the internal ring, this should prevent a new hernial sac being dragged down by traction on the cord.

22. *Orchidectomy with removal of the cord has a definite, though limited, indication* in older men with large hernias. Prior permission for orchidectomy must be obtained.

23. *If orchidectomy is declined where indicated, transection of the cord at the internal and external rings with removal of the intervening portion is an acceptable procedure.* Atrophy of the testicle usually will not occur unless it has been subjected to traction or removed from its bed, thereby destroying its collateral circulation. Over twenty years ago 325 cases of cord transection were reported (cited in 1) with gangrene of the testicle a complication in only four patients.

24. *Most surgeons use silk or cotton in hernia repair while* wire has its occasional advocates.[3] I routinely use 2-0 silk in the inguinal canal, cut ⅛th" from the knot (3 throws). Catgut is almost universally criticized for stimulating cellular reaction without much fibroplasia, and for becoming untied. However, one should not overlook the tolerance (but not preference) for catgut

expressed by one author[3] reporting 7,000 hernia repairs with a phenomenally low recurrence rate. Maximal fibroplasia is probably obtained in the McArthur or other fascial repair. For tying small vessels, my personal preference is for 4-0 and 5-0 catgut, cut exactly on the knot (2 throws). Hemostasis by thrombosis has already occurred when these become untied, and volume of foreign material is thus minimized. These ties are not extruded. Older studies on catgut probably should be revised or repeated using the modern products.

25. *Although the gridiron incision (La Roque) into the abdominal cavity above the internal ring* (through the same skin incision) *has its staunch advocates for both sliding and non-sliding hernias, it is hardly ever necessary.* Support of this view is not lacking in the literature.[4] It is true that on the right side incidental appendectomy is facilitated. However, appendectomy at the time of hernioplasty it not generally accepted as a good procedure. This consideration is of legal importance to the surgeon. Conservatism is desirable in elective surgery; accordingly, the gridiron incision should not be done if the surgeon feels it unnecessary.

26. *Good anesthesia and the best postoperative care are essential to the success of any hernia repair.* Very early, persistent ambulation[5] is indicated in nearly all cases, particularly in the obese, the elderly, and the infirm. Only a healthy person may safely withstand the deleterious effects of bed rest.

27. *Wound infection remains a potential hazard of elective surgery,* not within the scope of this discussion, but requiring meticulous effort aimed at its avoidance.

Summary

Inexperienced surgeons approach surgery for inguinal hernia with unjustified confidence in their results. What are believed to be the proven precepts of inguinal hernia repair, based on over 200 personal cases, are presented. Any surgeon undertaking inguinal hernia repairs should be aware of these considerations.

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Serum Lipids and Lipoprotein Concentrations in Military Academy Graduates—Trends from 1952 through 1958*

By

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A REPORT from this laboratory in 1958[1] summarized results, up to that time, of a longitudinal study of blood lipids and lipoproteins in the entire 1956 class of United States Military Academy (USMA) cadets. The experiment was organized in order to determine if either the value or the trend of a blood serum parameter could be utilized as (a) an index of the presence of atherosclerosis in Air Force personnel at any age, and (b) a predictive measure of susceptibility to atherosclerotic coronary disease. The evaluation would be accomplished by blood sampling of each individual at two year intervals through the 6th decade of life, and, on the basis of recorded chemical and physiochemical measurements, determine if any of the variables did, in fact, reflect cardiovascular status or predict clinical coronary disease. The present report summarizes results and tentative findings after the 4th biennial samplings (8th year of the experiment).

METHODS

Blood samples were taken from each member of the USMA class of 1956 at the time of his annual physical examination†† during the calendar year 1958. Many of the individuals were stationed overseas; thus, the blood lipid and lipoprotein variables were determined from whole blood shipped from various parts of the world. Of the 474 men who had graduated in June 1956, 3 had left the service, 1 had died, and 9 for various reasons declined further participation. Ten men failed to respond to the correspondence requesting their cooperation in the study. From the 451 who consented, 447 satisfactory blood samples were obtained and the necessary analyses accomplished.

Chemical and physiochemical determinations were made precisely as previously reported.[2,3] At the time of blood sampling, height, weight, and systolic and diastolic pressures were taken and recorded with the auscultatory findings on a form which accompanied the blood sample. These data were recorded on IBM cards along with the results of serum analyses, and varying aspects were subjected to statistical examination. The results are shown in tables 1 through 6.

RESULTS AND DISCUSSION

The means and standard deviations of serum analyses with those for age, height, and weight for each of the 4 study years are recorded in table 1. Considering the decrease in the height/weight ratio, a rough indication of advancing obesity, the average member of the USMA class of 1956 is progessively ingesting more calories than he utilizes for energy purposes. The serum concentrations of most of the blood lipids and lipoproteins have also increased between samplings. The mean serum cholesterol level is 35 percent higher in 1958 than it was in 1952. Among the low density lipoproteins, the means for the S_f^0 0–12

The contents of this paper reflect the authors' personal views and are not to be construed as a statement of official Air Force policy.

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†† About one-third of the blood samples were taken at another date during calendar year 1958 due to changes in assignments and occasional blood shipment difficulties.

TABLE 1

PHYSICAL AND BLOOD MEASUREMENTS MADE ON THE USMA CLASS OF 1956

Variable	Year	Number of subjects	Mean	Standard deviation	Range
Age	1952	593	19.6	1.2	17–22
	1954	485	21.5	1:2	19–24
	1956	459	23.5	1.2	21–26
	1958	447	25.5	1.2	23–28
Height	1952	608	70.5	2.2	65–77
	1954	499	70.7	2.3	61–76
	1956	479	70.6	2.2	62–76
	1958	433	70.8	2.1	65–76
Weight	1952	608	158.3	16.9	120–220
	1954	499	165.5	16.7	105–220
	1956	478	166.2	16.7	109–220
	1958	432	171.2	20.1	120–230
(Ht/Wt)100	1952	608	45.0	4.0	35–56
	1954	499	43.1	3.6	33–58
	1956	478	42.8	3.7	33–57
	1958	431	41.8	4.2	32–56
Cholesterol	1952	511	184.8	39.2	39–371
	1954	483	219.3	36.8	111–353
	1956	479	235.3	41.5	127–448
	1958	447	249.1	41.5	125–396
Phospholipid	1954	144	8.7	1.2	5.2–11.2
	1956	479	9.6	1.2	6.3–13.7
	1958	447	9.6	1.4	5.4–14.2
Low density lipoproteins ($\rho \leq 1.063$)					
S_f° 0–12	1952	394	183.8	48.9	36–375
	1954	486	195.8	49.4	71–376
	1956	478	288.5	76.9	76–716
	1958	447	331.6	90.2	85–609
S_f° 12–20	1952	521	21.0	10.7	1–56
	1954				
	1956	472	20.6	15.6	3–110
	1958	447	30.6	15.8	4– 90
S_f° 20–400	1956	475	47.7	43.4	4–399
	1958	447	90.5	57.1	4–399
S_f° 12–400	1954	486	43.5	30.3	3–301
	1956	478	67.7	54.6	3–476
	1958	447	121.0	65.8	8–456
S_f° 12–400/S_f° 0–12	1954	486	.24	.23	.01–3.05
	1956	478	.25	.31	.02–5.67
	1958	447	.38	.29	.03–4.45
Atherogenic index*	1954	486	27.2	7.6	11–65
	1956	478	40.7	13.5	12–121
	1958	447	54.4	16.5	18–130
High density lipoproteins ($\rho > 1.063$)					
1.2	1956	475	272.8	67.2	31–515
	1958	438	245.5	69.1	11–594

* Atherogenic index = A.I. = $\dfrac{S_f^\circ 0\text{–}12 + 1.75\,(S_f^\circ 12\text{–}20 + S_f^\circ 20\text{–}400)}{}$

classes show an increase of roughly 70 percent between 1954 and 1958. During the same interval, the mean of those serum moieties contained within the S_f° 12–400 lipoprotein classes was elevated by about 180 percent. These alterations might be evaluated in light of two previous findings with population groups. In a dietary study involving 25 hospitalized patients,[4] it was noted that the S_f° 20–400 lipoprotein class (the major fraction of the S_f° 12–400 group) accompanied weight changes, whereas the S_f° 0–12 class of lipoproteins reflected dietary fat intake of the subjects. In 200 Army basic trainees,[5] increased weight was again associated with higher serum levels of S_f° 12–400 lipoproteins over an 8-week period, but an intense program of physical exercise apparently prevented a rise in the S_f° 0–12 lipoprotein class. Excess calories from fat were probably utilized for energy. Between 1956 and 1958 the increase of S_f° 12–400 lipoproteins among USMA graduates is consistent with the mean weight changes recorded. The pronounced rise in the S_f° 0–12 lipoprotein class may then reflect either a significant increase in the level of fat intake or a consequence of the decreased emphasis on physical training after leaving the military academy. Animal studies in this laboratory[6] have suggested that the ratio of serum concentrations S_f° 12–400/S_f° 0–12 may be more closely related to the rate of cholesterol deposition at the arterial intima than is the absolute level of either variable. As listed in table 1, data for the ratio are available for the three study years 1954, 1956 and 1958. It may be significant that in spite of the increased mean serum levels for both S_f° 0–12 and S_f° 12–400 lipoprotein classes between 1954 and 1956, the ratio mean remained essentially unchanged. In 1958, however, the ratio mean for the population is found to be approximately 50 percent higher than it was in 1956.

In the period between 1956 and 1958, the mean levels of the serum low density lipoprotein concentrations (S_f° 0–400) were found to have increased, while the mean level of the high density lipoproteins decreased (table 1). During this same interval, the mean level of total cholesterol had increased to about 106 percent of the 1956 level. These facts indicate that an increased proportion of the total cholesterol was associated with protein molecules of lower density. This phenomenon is consistent with a similar change within the low density group where the significantly higher mean for the S_f° 12–400/S_f° 0–12 ratio in 1958 also indicates the increasing tendency toward low density transport of cholesterol in the serum. These shifts would seem to indicate a rather significant alteration in cholesterol transport and perhaps in cholesterol metabolism in this population.

TABLE 2

WEIGHT GROUPS WITH THE NUMBER OF SUBJECTS IN EACH IN 1952

Weight group	Deviation of weight from standard*	Number of subjects
1	15 lbs. or more under standard weight	17
2	5–14 lbs. under standard weight	68
3	Standard weight ± 4 lbs.	110
4	5–14 lbs. over standard weight	127
5	15 lbs. or more over standard weight	102

* Standard weight, specified for height and age, was taken from Air Force Manual 160-1.

The steadily increasing weight of this population, along with a significant decrease of height/weight ratio, prompted a longitudinal examination of the serum parameters as functions of weight plus or minus standard weight. Accordingly, the subjects were divided into 5 weight groups (table 2) on the basis of the number of pounds each was over or under the weight, in 1952, specified for his height and age by Air Force Manual 160-1.

For each weight group, means of the blood measurements and of weight for the years in which measured are given in table 3. Also given in parentheses, for each set of means, is the square root of the mean square error, the standard deviation for testing differences among the 5 weight

TABLE 3

MEANS OF BLOOD MEASUREMENTS AND WEIGHT FOR THE FIVE WEIGHT GROUPS WITH THE SQUARE ROOT OF THE MEAN SQUARE ERROR IN PARENTHESES FOR THE YEARS THE VARIABLE WAS MEASURED. THE SINGLE LINE INDICATES WHICH MEANS DIFFERED FROM EACH OTHER AT THE .05 LEVEL, THE DOUBLE LINE AT THE .01 LEVEL.

Variable	Weight group*	Year			
		1952	1954	1956	1958
Weight	1	138.5	146.8	148.5	146.6
	2	142.5	151.5	153.0	154.9
	3	151.1	161.1	161.7	164.8
	4	160.6	168.0	169.3	175.7
	5	178.5	181.0	179.3	188.4
		(10.1)	(12.1)	(15.8)	(15.9)
Cholesterol	1	173.3	230.9	238.2	255.7
	2	176.7	216.8	223.9 |	242.2
	3	181.7	213.8	231.3	246.8
	4	192.9	221.5	241.8 |	253.0
	5	181.7	217.0	231.4	249.5
		(38.3)	(36.6)	(40.0)	(41.8)
Phospholipid	1		8.75	9.54	9.83
	2		8.53	9.52	9.48
	3		8.54	9.40	9.57
	4		8.84	9.68	9.83
	5		8.47	9.41	9.56
			(1.20)	(1.23)	(1.38)
Low density lipoproteins ($\rho \leq 1.063$)					
S_f° 0–12	1	190.9	211.8	305.1	331.2
	2	181.0	190.3	279.6	312.0
	3	178.9	192.1	278.9	327.0
	4	190.5	195.6	292.1	336.5
	5	181.5	194.6	286.9	339.4
		(48.6)	(49.4)	(75.6)	(90.5)
S_f° 12–20	1	19.2		18.7	25.7
	2	17.7 |		16.0	24.1 ‖
	3	20.1		19.6	31.3 ‖
	4	22.3 |		21.6	31.5 ‖
	5	22.1 |		20.0	33.5 ‖
		(10.3)		(15.2)	(15.6)
S_f° 20–400	1			45.1	74.8
	2			37.0	78.4
	3			48.3	91.8
	4			46.8	93.2
	5			45.8	97.1
				(41.8)	(57.5)

* See Table 2 for the number of subjects in each weight group.

TABLE 3 (*continued*)

Variable	Weight group*	Year			
		1952	1954	1956	1958
S° 12–400	1		43.6	63.8	100.5
	2		34.8	53.1	102.5
	3		41.9	67.9	123.1
	4		44.5	68.4	124.7
	5		42.7	65.7	130.5
			(27.8)	(52.3)	(66.1)
S_f° 12–400/S_f° 0–12	1		.215	.215	.318
	2		.198	.196	.347
	3		.238	.281	.420
	4		.239	.234	.383
	5		.225	.229	.387
			(.215)	(.310)	(.293)
Atherogenic index	1		28.6	41.8	50.8
	2		25.1	37.2	49.1
	3		26.6	39.8	54.3
	4		27.4	41.0	55.5
	5		26.9	40.2	56.8
			(7.4)	(13.2)	(16.7)
High density lipoproteins ($\rho > 1.063$)					
1.2	1			272.4	233.5
	2			271.4	244.9
	3			277.7	241.1
	4			271.3	258.4
	5			268.0	237.5
				(68.8)	(70.2)

groups means. Those means that differed significantly, using Duncan's multiple range test for unequal sample sizes,[7] are identified in table 3 with single and double lines. The single line indicates the difference was significant at the .05 level, the double line at the .01 level. There were significant differences at the .05 level between the means of weight group 2 and the means for: group 4 for cholesterol in 1956, groups 4 and 5 for atherogenic index (A.I.) in 1958, and groups 4 and 5 for S_f° 12–400 in 1958. Weight group 2 mean for S_f° 12–20 differed from the means for groups 4 and 5 at the .05 level in 1952 and from the means of groups 3, 4, and 5 at the .01 level in 1958. The unequal sample sizes in the 5 weight groups account for apparent anomalies in the results of this testing; e.g.,

TABLE 4

RANK CORRELATION COEFFICIENTS BETWEEN THE DIFFERENT YEARS FOR THE BLOOD MEASUREMENTS OF 424 SUBJECTS FOR WHOM ALL MEASUREMENTS WERE AVAILABLE IN 1954, 1956 AND 1958

Variable	Correlation coefficient for		
	1954–56	1954–58	1956–58
Cholesterol	.69	.55	.59
Phospholipid	.69*	.49*	.47
Low density lipoproteins ($\rho \leq 1.063$)			
S_f° 0–12	.57	.49	.60
S_f° 12–400	.44	.36	.39
S_f° 12–400/S_f° 0–12	.39	.33	.37
Atherogenic index	.54	.47	.48

* Based on the measurements of 127 subjects.

weight group 1 for S_f° 12–400, 1958, is less than that for weight group 2, yet the mean for group 1 is not significantly less than those for groups 4 and 5.

It would seem that little consistent relationship between weight status at age 20 and subsequent serum concentrations of lipids and lipoproteins can be recorded by age 26. Data listed for the concentration of the S_f° 12–20 lipoprotein class in 1958 suggest some association, but failure to record a similar finding in 1956 makes hazardous a claim of predictability at this time.

Data recorded for this population through 1956 suggested some indication of rank stability within the group.[1] Correlation analyses were repeated utilizing the additional data collected in 1958. Although

TABLE 5

PERCENTAGE OF SUBJECTS WHO RANKED IN THE UPPER 10 PERCENT AT "FIRST" SAMPLING WHO CONTINUED TO RANK IN THE UPPER 10 PERCENT AT A LATER SAMPLING AND WHO RANKED IN THE UPPER 10 PERCENT IN ALL SAMPLED YEARS OR IN ALL SAMPLED YEARS BUT ONE

Variable	In upper 10 percent			Percent of subjects		
	Number of subjects	Year in which sampled		Who continued to rank in upper 10 percent	Who ranked in upper 10 percent in all sampled years	Who ranked in upper 10 percent in all but one of the sampled years
		First	Later			
Cholesterol	36	1952	1954	36.1	13.9	41.7
			1956	30.6		
			1958	27.8		
		1954	1956	63.9		
			1958	47.2		
		1956	1958	55.6		
Low density lipoproteins ($\rho \leq 1.063$) S_f° 0–12	37	1952	1954	29.7	13.5	16.2
			1956	32.4		
			1958	29.7		
		1954	1956	37.8		
			1958	32.4		
		1956	1958	32.4		
S_f° 12–20	37	1952	1956	24.3	8.1	48.6
			1958	18.9		
		1956	1958	29.7		
S_f° 12–400	42	1954	1956	38.1	16.7	38.1
			1958	23.8		
		1956	1958	26.2		
Atherogenic index	42	1954	1956	42.9	21.4	42.9
			1958	28.6		
		1956	1958	35.7		

mean levels for the serum variables as measured in 1958 were consistent with the mean trend observed through 1956, the subjects had not maintained their relative positions within the group to a sufficient degree either to suggest rank stability through 1958, or to predict promise of rank stability in the future. The rank correlation coefficients for the blood measurements of 424 subjects for whom there were observations in 1954–56–58 are given in table 4. All of the correlations are significantly different from zero at the .01 level.

The percent of the subjects with levels in the upper 10 percent at "first" sampling who continued to have levels in the upper 10 percent on subsequent samples is given in table 5. Also in this table are the percentages of those who ranked in the upper 10 percent in all samplings, and in all samplings but one. From this table there is little indication that the subjects consistently maintain levels that are in the upper 10 percent from year to year. Only 13.9 percent, or 5 of the 36 subjects, who had a cholesterol level in the upper 10 percent in 1952, also had levels in the upper 10 percent in the next three sampled years; 15 of the 1952 group, or 41.7 percent, had a level in the upper 10 percent in 2 of the 3 subsequently sampled years. The subjects with the high levels of S_f° 12–400 and A.I. could only be followed for two samplings after the "first," yet the relative rank ordering from year to year is about the same as for cholesterol.

To our knowledge, no etiologic relationship between elevated blood pressure and atherosclerotic coronary disease has ever been established. The frequent coexistence of hypertension and atherosclerosis, however, has been the subject of extensive comment.[8] It was decided, therefore, to determine if some association existed between recumbent diastolic blood pressure and any of the serum parameters measured in this population at the 1958 sampling. The data are recorded in table 6 for three blood pressure groups 48–64; 65–78; and 79–98. As far as the blood lipids and lipoproteins are concerned, the results are uni-

TABLE 6

MEANS AND RANGES OF BLOOD MEASUREMENTS AND WEIGHT FOR 1958 FOR THE THREE RECUMBENT DIASTOLIC BLOOD PRESSURE GROUPS WITH THE SQUARE ROOT OF THE MEAN SQUARE ERROR AS STANDARD DEVIATION. THE DOUBLE LINE INDICATES WHICH MEANS DIFFERED FROM EACH OTHER AT THE .01 LEVEL

Variable	Blood Pressure*						
	48–64		65–78		79–98		Standard deviation
	Mean	Range	Mean	Range	Mean	Range	
Weight	166.7‖	130–211	171.4	120–229	175.7‖	130–230	20.0
Cholesterol	247.5	168–375	249.0	125–396	249.7	147–396	41.9
Phospholipid	9.62	7.1–13.7	9.58	5.4–13.6	9.77	7.0–14.2	1.38
Low density lipoproteins ($\rho \leq 1.063$)							
S_f° 0–12	322.7	158–570	330.8	85–554	336.2	133–609	90.6
S_f° 12–20	31.0	4– 90	30.4	4– 90	30.1	4– 66	15.9
S_f° 20–400	93.7	12–399	89.7	4–343	90.0	8–396	57.8
S_f° 12–400	124.6	18–443	120.1	8–431	120.1	12–456	66.7
S_f° 12–400/S_f° 0–12	.39	.06–1.90	.40	.03–4.45	.36	.05–.98	.29
Atherogenic index	54.1	21–105	54.1	18–109	54.6	21–130	16.9
High density lipoproteins ($\rho > 1.063$)							
1.2	253.2	114–460	240.1	11–594	250.0	34–426	70.4

* The number of subjects in each blood pressure group, except for occasional missing observations on some of the measured variables, were for pressures 48–64: 96, 65–78: 217 and 79–98: 110.

formly negative. *Weight* was the only variable for which the means were different between blood pressure groups. Those subjects with diastolic pressures in the 48–64 range weighed significantly less ($\rho < 0.01$) than those individuals in the 79–98 mm. Hg. group.

Comments

Data thus far collected on the USMA class of 1956 fail to suggest that any of the blood lipid or lipoprotein parameters measured will predict, on an individual basis, those subjects with a particular predisposition to coronary disease. If the same individuals had maintained rank within the population from year to year, such would have suggested that segregation of homogeneous groups was being accomplished. However, it is possible that in the future the individuals of this study will establish themselves in a consistently maintained rank ordering on some variable that is predictive of coronary artery disease.

Data taken on the population as a whole are equally inconclusive. Stated simply, we find that as the individuals have grown older they have put on excess weight in relation to their height, and the lipid content of their blood has increased. Although this documentation may be somewhat more complete than previous studies, the results are merely confirmatory.

It is possible that current division of schlieren patterns obtained during ultracentrifugal analysis into classes of lipoproteins does not reveal those most clearly related to the pathogenesis of atherosclerosis. Research will continue in this laboratory in an effort to identify those lipoprotein moieties which will serve as the best index of the presence of atherosclerosis.

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Nicholas Senn, Surgeon and Soldier: A Happy Combination in Military Medicine*

By
AMOS R. KOONTZ, M.D.

"NICHOLAS SENN, 'master surgeon', pathologist, teacher, patriot and loyal friend, died January 2, at his home in Chicago, from dilatation of the heart, age 63 years, 2 months and 2 days."[1]

The foregoing is the opening paragraph in the long obituary notice of Nicholas Senn, which appeared in the *Journal of the American Medical Association* for January 11, 1908. Such was his prominence that seldom, if ever, has the *Journal* devoted more space or been more eulogistic of any distinguished deceased physician. At the meeting of the A.M.A. following his death, Dr. Rudolph Matas, one of America's most distinguished surgeons, presided as Chairman of the Section on Surgery. I feel it only proper to give his estimate of Senn before proceeding with a brief account of the facts of his life. In his opening remarks Dr. Matas had the following to say:[2]

"Distinguished Guests and Fellow Members: I feel, as your presiding officer, that I would be remiss in the discharge of my duty and grievously at fault with my own sentiments, if I failed to notice that this day is made sadly notable by the absence of one who for more than a quarter of a century was a Titan in our midst and whose voice, now stilled forever, thrilled and swayed our assemblies with the fervor of his eloquence, the magnitude of his accomplishments, the stimulus of his example and the vast power of his exhaustless energy—Nicholas Senn.

"Vir proeclarus et ornatus—Senn, the incomparable teacher, the peerless clinician, the scrutinizing pathologist, the perennial investigator, the faithful historian and charming raconteur; the world traveler, the philosopher, soldier, patriot and organizer; Senn, the philanthropist, the citizen of Chicago and of the world; Senn, one of the greatest masters of our art—will remain an imperishable name in the great pantheon of American surgery."

Such was the contemporary estimate of Senn. Let us now determine whether this estimate was justified or not. Let us see what kind of metal was poured into the mold and how it was molded.

Senn was born in Buchs, Canton of St. Gall, Switzerland, on October 31, 1844. He came to the United States with his parents in 1852 and settled as Ashford, Wisconsin. He graduated from the Fond du Lac High School in 1864. He taught school for awhile and then began the study of medicine with Dr. E. Munk of Fond du Lac. He entered the Chicago Medical College in 1865 and graduated with first honors in 1868. His thesis was on "The Modus Operandi of Digitalis Purpurea." He married Miss Aurelia S. Muehlhauser, of LaCrosse, in 1869 and commenced practicing in Ashford. He moved to Milwaukee five years later and became a member of the attending staff of the Milwaukee Hospital. In 1877 he returned to Europe, where he studied at the University of Munich and received a degree in medicine *cum laude* in 1878.[3] On returning to the United States he again practiced in Milwaukee until 1893, at which time he took up his permanent residence in Chicago.

His career as a medical teacher began early, when in 1884 he was elected Professor of the Principles and Practice of Surgery in the College of Physicians and Surgeons of Chicago. Then in 1888 he was made Professor of the Principles of Surgery and Surgical Pathology in Rush Medical College, and in 1891 became Professor of Practice of Surgery and Clinical Surgery in the same institution. Later he was appointed professorial lecturer and then Professor of Mili-

* Read on November 18, 1958 before the Annual Meeting of the Association of Military Surgeons of the United States, Washington, D.C.

tary Surgery in the University of Chicago. He was also Professor of Surgery in the Chicago Policlinic.

The obituary notice in the A.M.A. states the "Dr. Senn was a thorough teacher and held the attention of his classes closely by the interest with which he invested the topic on which he was lecturing. His information was universal and perfectly classified, he was never at a loss for a word, and could always supply the names of authorities, dates and particulars, and this off-hand, without reference to notes. His style of delivery was dramatic and his audiences never tired. The students never stayed away from his clinics and the amphitheatre was always filled."

He was a contemporary of Richard Mansfield, but it is said that he was the greater tragedian of the two. "No Keene, no Booth, no Barrett knew better how to play on the emotions of his audience than did Nicholas Senn; no Belasco possessed greater intuition of the minuteness of detail of the setting for the stage than did he. While, primarily students came to learn, they returned again and again to be fascinated, charmed and inspired by the magnetism of voice, gesture and facial expression which held them spellbound and attentive for hours."[4]

He early took a deep interest in the National Guard and labored to increase its efficiency. While in Milwaukee he was Surgeon General of the Wisconsin National Guard, and on moving to Chicago became Surgeon General of the National Guard of Illinois. He instituted the systematic physical examination of recruits nearly approximating that required by the Regular Army, the mental and physical examination of candidate medical officers and a promotional examination of medical officers, which was also closely patterned on that required by the regular service. At the outbreak of the Spanish-American War, he at once went to the State Mobilization Camp at Springfield and assumed charge.

On May 13, 1898 he was commissioned lieutenant colonel and chief surgeon, U. S. V., and assigned to duty with the Sixth Army Corps. At Chickamauga Park, Georgia, he was in temporary charge of Leiter General Hospital from May 28 to June 25. On June 24 he was ordered to report to the Adjutant General of the Army in Washington for special duty pertaining to the expedition to Santiago. He was there until June 30 when he proceeded to Newport News, Virginia, and accompanied the expedition under the command of Brig. Gen. Guy V. Henry, U. S. V., to Santiago, Cuba. There he was assigned to duty as chief surgeon of the operating staff with troops in the field. He was on duty with the Army of the Invasion near Santiago until July 14, when he reported for duty on board the U. S. Hospital Ship *Relief*. On August 20 he was relieved from duty in Cuba and sent to Montauk Point, New York, and placed in charge of the surgical work there. He resigned on September 6 and was honorably discharged on September 17. Later (Feb. 13, 1900), in general orders from the Adjutant General's Office, Lieutenant Colonel Senn was commended for his surgical work during the Cuban campaign and for his scientific study into the causes of typhoid fever among the troops.

But long before this military experience Senn had already become a distinguished professor of surgery and was a highly trained scientific surgeon who had made many contributions to surgery.[5] He had done valuable experimental work in the study of air embolism, surgery of the pancreas, gunshot wounds, and intestinal anastomosis. In the last named condition he introduced the use of decalcified bone plates, which were the precursors of the old Murphy button. He had also devised a method of detecting intestinal perforation by means of inflation with hydrogen gas. Some of this experimental work was performed on himself. Much later, in 1903, he was the first to use roentgen rays in the treatment of leukemia.

He gave surgical clinics twice a week starting at 2:00 P.M.[6] He always first showed gross and microscopic sections from cases in which operation had been performed, usually at the preceding clinic. He laid great stress on a thorough knowledge of

surgical pathology and bacteriology. He then presented cases from the hospital and the dispensary. This generally took from two to four o'clock. He then began operating and operated from four until six or seven. He talked all the time he was operating. The majority of the students and visitors remained throughout the long clinic.

Senn introduced into his clinic the plan which was customary in German clinics of calling down students, having them examine cases, stating their findings, their diagnoses, and their suggestions as to treatment. Halsted in his clinic in the Johns Hopkins Medical School and Hospital followed the same plan, which he also undoubtedly got from the German clinics.

Senn also constantly emphasized the importance of surgical research and experimental surgery in the development of clinical surgery.

The best summation of Senn's character and abilities which I have seen is that from the obituary notice in the *Journal of the American Medical Association:*

"Nicholas Senn was truly great; master of his profession; a patriot, always ready to sacrifice his personal interests and comforts for the services of his adopted country; intensely loyal in his friendships; generous to a fault; simple-minded; too honest to harbor suspicions; a man of singularly clean speech, never profane nor vulgar. His greatest glory was in his extraordinary capacity for work, which he held as duty, and that work entirely for the betterment of his fellow men. Of him it may with truth be said that the world is better for his having lived."

Dr. Senn was a member of many scientific societies. In 1896 he delivered the Oration on Surgery before the American Medical Association and in 1897 he was President of that organization. He founded the Association of Military Surgeons of the United States in 1891 and was its president for two years. No other man has been president for more than one year.

He was not only a very distinguished, as well as one of the most prominent American surgeons, but was well known internationally as well. Besides being a member of the American Surgical Association and all of the other leading American medical societies he was a member of the following foreign societies: Royal Medical Society of Buda-Pest, Norwegian Medical Society, Swedish Medical Society, Japanese Red Cross, Academy of Medicine of Mexico, Manila Medical Society, Glasgow Academy of Medicine, and Imperial-Royal Medical Society of Vienna. He was the author of seven surgical textbooks and of more than 300 articles in the medical literature. He was a great traveler and wrote a number of books on travel. Also a series of his articles on travel were published in the *Journal of the American Medical Association.*

Senn crossed the ocean many times. Aboard ship[7] he would go into the smoking room with a pile of manuscript, a lot of blank paper, and a box of cheap cigars. Unmindful of the noise from the card tables and from the drinkers, he soon immersed himself in his work and would sit for hours smoking and writing. About four in the afternoon he would go out on deck and sleep for an hour in his chair. He would then return to the smoking room and continue his writing—often going without dinner—until a late hour at night.

He had a great power of application and concentration and would often, when in a creative mood, work for several days with little sleep, completely unaware of whether he had changed his clothing, eaten or slept.

The Association of Military Surgeons of the United States is one of the oldest existing societies of medical military officers in the world.[8] So far as I know, only the Swedish Association of Military Surgeons (formed in 1875) is older. Our Association was founded by Senn in 1891. On September 17 of that year, in response to a summons from Dr. Senn, a group of medical officers of the National Guard met in the parlors of the Leland Hotel in Chicago as dinner guests of Surgeon General Senn of the Wisconsin National Guard. Dr. Senn then told his guests the purpose of the meeting and the Association was formed with only National Guard officers as members. At the first meeting, however, five medical officers of the

Regular Army were elected to honorary membership. At the third meeting (1893) the Constitution was changed so that officers of the Army and Navy were equally eligible with those of the National Guard. Officers of the Public Health and Marine Hospital Service were shortly afterwards also rendered eligible. At that time there were no reserve officers of any service nor any Veterans Administration.

When the Association was originally organized, there were only 36 members, all medical officers of the National Guard.[9] Nearly ten years later there were 509 members, including officers of the Regular Army and Navy, U. S. Public Health Service, as well as those of the National Guard.

Such a man was Nicholas Senn—surgeon and soldier. Although he was one of the most popular clinical surgeons of his day, active and productive in research, and a prolific writer, I doubt if he will be remembered for anything so much as for having founded the Association of Military Surgeons. He had the Teutonic love of the uniform. He believed that Army doctors should be good soldiers as well as good doctors. He was the personification of professional competence, dynamic personality, and executive ability—a combination which is the summation of the ideal in military medicine. A great many of our military medical men today have the professional competence and the executive ability. These can be attained by dint of application. Some also have dynamic personalities—an innate quality. Those who have it are triply fortunate.

Senn was one of the first of either the civilian or professional medical officers to stress the importance of the military doctor's also being a good military man. This was highly important and boosted the status of medical officers with the line. Before that, they had often been rather unceremoniously pushed around in too many instances. There followed a period in our history in which the military side of the medical officer was possibly stressed too much and the professional side too little. Now happily we have reached a balance, where I believe it is pretty generally the concensus that the medical officer must not only have professional competence but must also be completely versed in his military duties. No doctor, no matter how competent professionally, can be an integral part of the armed forces unless he is also a good soldier. In war time too many highly competent civilian doctors, on being brought on active duty, resent having to be "military." Nothing could be more shortsighted. In World War I such great doctors as the late John M. T. Finney, William S. Thayer, and Hugh H. Young, who were respectively Chief Consultants in Surgery, Medicine, and Urology in the A.E.F., not only did outstanding professional work, but took great pride in the fact that they were also soldiers. Their uniforms were faultless and their military bearing beyond reproach. Such a man also was Senn. Of the moderns it may be said that he led the way in that happy combination in military medicine—surgeon and soldier.

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EDITORIALS

Our Convention

THE 67th Annual Convention of our Association will be held at the Mayflower Hotel, Washington, D.C., October 31, November 1 and 2. The theme chosen for the convention this year is "The Military Role in Medical Progress."

Our president, Rear Admiral Richard A. Kern, MC, USNR, Retired, has appointed as the General Chairman of the convention, Rear Admiral Curtiss W. Schantz, Assistant Chief of the Bureau of Medicine and Surgery for Dentistry and Chief of the Dental Division, Department of the Navy. The Scientific Program Chairman is Captain Clifford P. Phoebus, Medical Corps, U. S. Navy, Director of the Astronautical Division, Bureau of Medicine and Surgery.

There has been an increasing interest in all sections of the convention in the past few years. Credit goes to those who are on the committees and work out the many details months ahead of the meeting so that the persons attending will profit by their attendance. There is much to be learned from the papers presented, the technical exhibits, and the scientific exhibits.

It will be well to jot down the above dates on your calendar.

Medical Television

THE theme of our recent convention, the 66th, was "The Practice of Military Medicine—Broadening Concepts." That theme was fitting in more ways than one. This meeting brought with it one of the latest and fastest growing concepts in medical education and communication—closed circuit color television.

Through the efforts of Smith Kline & French Laboratories, the Association of Military Surgeons for the first time was able to view modern medical developments in color on a 9-by-12 foot television screen. The presentations, arranged by the Philadelphia pharmaceutical firm in conjunction with our own Scientific Program Committee headed by Colonel Frank M. Townsend, USAF, MC, were more than enjoyable entertainment. They were valuable additions to the Convention's scientific sessions.

The programs were well planned and brought about a necessary exchange of information regarding the practice of medicine in a day and age when advances are being made so rapidly that it is difficult to keep abreast of all the modern developments.

Nowhere is this more apparent than in our own field of military medicine. New problems are being confronted and mastered almost daily, on land, water, and in the air, yes, under water, and in outer space.

Recognizing the need to keep abreast of the times the General Chairman of the Convention, Colonel Aubrey L. Jennings, USAF, MC, and Colonel Townsend—through these television facilities—presented a broad insight into the medical work being carried on by our Armed Forces in the race to put man in space. Specialists from Cape Canaveral, the Arctic Aeromedical Laboratory in Alaska, the School of Aviation Medicine at Brooks Air Force Base, Texas, the Missile Development Center at Holloman Air Force Base, New Mexico, and other installations throughout the United States gave useful and timely demonstrations of their operations.

Seen on the huge screen, these discussions, well complemented with films and other visual aids, permitted a large audience to receive first-hand information direct from the personnel responsible for this work.

This was no easy job. To produce this

program the television staff of Smith Kline & French, well in advance of the meeting, had to travel to these far-flung installations to meet with Armed Forces personnel and decide how the topics chosen by the physicians could be telecast to the best advantage. Many hours of painstaking care went into the arrangement of even the smallest segment of the show.

In addition to the production arrangements, a skilled crew of audio and video technicians from the pharmaceutical company moved into the Capital a week prior to the convention to begin setting up the electronic equipment which was to beam the programs from Andrews Air Force Base to the Mayflower Hotel. Intricate and complex cameras, the world's largest compatible television projector and an entirely portable studio had to be erected and tested, and a mobile control bus had to be checked out before "air time."

The procedure was not new to the television staff—even though the presentation was new to the Association of Military Surgeons' convention. In 1949, Smith Kline & French presented not only the first color medical program, but also the first non-experimental color TV program of any kind ever seen in the United States for the American Medical Association annual meeting in Atlantic City, New Jersey. That program clearly demonstrated the superior medical teaching aspects of closed circuit color television—even though it was seen on 10-inch receiver sets scattered throughout the meeting hall.

The company has made remarkable improvement in its equipment in the ten years that has elapsed.

The Association of Military Surgeons wishes to thank Smith Kline & French for the opportunity to present these wide spread activities to its members.

Awards

EACH year during our convention we have the opportunity to recognize outstanding service by individuals of the Federal Medical Services. While it is not possible to recognize everyone, for there are many, still we can honor a few through the presentation of awards which have been provided by pharmaceutical companies, our Association funds, and in one case by an officer who set up a trust fund for the purpose.

The Sir Henry Wellcome Medal and Prize is presented to the winner in a competitive essay contest. The Wellcome Foundation in London provides the prize. In another part of this journal the rules of the contest are laid down.

The Gorgas Medal, made possible by the Wyeth Laboratories, recognizes some outstanding work in preventive medicine.

The Stitt Award, established in 1954 by the Pfizer Laboratories, honors outstanding work in the field of antibiotics.

The McLester Award is made for notable work in the field of dietetics and nutrition. This award is made possible by the J. B. Roerig Company.

The Andrew Craigie Award which recognizes pharmacy is presented through the courtesy of Lederle Laboratories.

The Sustaining Membership Award, made through our Sustaining Membership Section, is given for some outstanding work in medical research by a person in the Federal service.

The Major Louis Livingston Seaman Prize, made possible by that officer, now deceased, recognizes an outstanding paper in MILITARY MEDICINE.

The Founder's Medal is presented by the Association for some outstanding contribution to military medicine or for meritorious service to the Association.

We must mention here two lectures, the William C. Porter Lecture in the field of psychiatry, provided for by Smith Kline & French Laboratories, and the Sustaining Membership Lecture made possible by our Sustaining Members.

The Federal Medical Services are contributing greatly to medicine and its allied branches and it is a great privilege to recognize this work. The Association of Military Surgeons of the United States is justly proud to be the medium through which these contributions are recognized.

The Association of Military Surgeons of the United States

Founded 1891, Incorporated by Act of Congress 1903
Suite 718, New Medical Bldg., 1726 Eye Street, N.W., Washington 6, D.C.
Telephone NAtional 8-2206
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Around the World

(Ser. III, No. 17)

By
CLAUDIUS F. MAYER, M.D.

QUEENSLAND'S government decided to survey the health of the almost 14,000 full-blooded *aborigines* in the Northern Territory of *Australia*. Such a survey will reveal interesting facts, but it will meet with innumerable difficulties because these native inhabitants do not have true proper names to identify them correctly. Names like Polly, Joe, Banana, Frog apply to many of them. As a preliminary procedure, Mantoux testing was done on a little more than 5,000 of these people. It is held that tuberculosis was non-existent among the Australian aborigines before the settlement of the white man. Now, the advanced check-ups show exposure to tuberculosis at an early age.

Queensland is also known to have the *highest fatality from melanoma* (23 per million of population). It had been repeatedly asserted, and clinicians held the view for some years, that there is a certain geographical variance in the incidence of and death from cancer. The *geographical aspect of malignant* tumors was again confirmed by a statistical study on the melanoma of the skin. A member of the Sydney School of Public Health scanned the mortality statistics of many countries and found that excess of sunlight was an important predisposing cause of melanoma in fair-skinned persons. Melanoma is more frequent in countries nearer the tropics where the total amount of ultraviolet radiation is larger. Dress, sports (swimming and surfing) may be additional factors to favor melanoma. (We may add here as an additional support for the role of climatic factors in the distribution of malignant melanoma that the death rates from this tumor are much lower in Canada than for example in the United States.)

It is said that *New Zealand* is one of the rare fortunate countries of the world where *racial integration* is no problem because there has never been racial segregation, according to some polite sources. In New Zealand, there is a single people although the population is partly white (about 2 million European descendants) and partly dark-skinned (120,000 Maoris). The *native Maoris* are Polynesians, members of a highly intelligent primitive race. They immigrated to New Zealand from one of the Society Islands around 950 A.D. under their legendary leader called Kupi. Four-hundred years later, an 8-canoe fleet of the Maoris set out from the same Pacific Islands to the land of Kupi where they settled as farmers and hunters. In 1840, the Maoris signed their peace treaty with Queen Victoria. Nevertheless, many wars followed with the British troops until 1870. Since then, the British policy has been to deal with the natives as equals to the white, which sometimes might have resulted in friction.

Recent trials in the *South Island of New Zealand* suggest for the veterinarians that selenium has a protective action when given to lambs, in outbreaks of a type of *muscular dystrophy affecting young lambs*. It has been known also that selenium has high protective powers against necrotic liver degeneration of the chick. The muscular dystrophy of the New Zealand lamb is called "ill thrift." Lambs affected by the disease showed rapid growth upon being fed with selenium. In other words, muscular dystrophy in these animals is a sign of selenium deficiency.

Statistical studies in Mexico City show that *lung cancer in Mexico* is rare, though its rate is on the increase, especially in the immigrants. Full-blooded Indians are rarely affected by such localization of cancer; out of 148 patients, only 3 were Indians. At other parts of the world also, lung cancer was *more prevalent among immigrants*. This

was also the case in New Zealand, Israel, and in the city of Los Angeles. Another recent observation about lung cancer comes from the Provincial Hospital of Port Elizabeth, *South Africa.* There it was found that the white male South Africans are heavy cigarette smokers and, in spite of this, they have a relatively low mortality rate from lung cancer. *Urban inhabitants have a higher incidence of lung cancer,* which is blamed upon an increased pollution of the atmosphere. Comparing the racial incidence ot lung cancer in South Africa, it seemed that British immigrants have a higher morbidity rate than the Union-born men or the immigrants from other countries.

The cranberry scare of the past Thanksgiving brings to our mind the numerous *synthetic dyes and chemicals* which are used *for coloring many food products,* or for their preservation. We have also the colors and flavors in the lipsticks, and in the hair dyes. Various countries (*Germany, England, etc.*) have issued lists of harmless dyes which can be used without any danger of creating cancer. But there are many more dyes used in our daily cosmetics. The number is so large that their testing would be rather impractical. Several constituents of cosmetics also may be cancerigenic or toxic. Estrogen itself causes cancer in animals, and it is also thought to be a factor in human cancer. The action of the cancerigens is slow. There may be decades of a latent period, perhaps 20 years as an average, before they become manifest in their malignant action. Hence, identification of a specific cause is very difficult. Who would under such conditions dare to say what is a safe dose and what is hazardous for man?

Among the *nitrogen mustard derivatives,* special mention should be made of the methyl-bis(beta-chlorethyl)-amine-N-oxide hydrochloride, which is also shortly known as *Asta* or Mitomen, or Nitromin. This substance proved to have *anti-tumoral effects.* Experiments carried out by Japanese and German investigators show such an effect. Yet, as Swedish scholars have recently pointed out, *Mitomen* has certain highly toxic side effects. The drug was given intraperitoneally and intravenously to patients who had cancer in the abdominal organs. Undoubtedly, the drug destroys the cancer cells, and patients who received it as a medicament showed a better prognosis than those who were left without it. Yet, it cannot be recommended for further human use.

Contamination of the air with smoke and industrial exhaust products seems to be world wide. One of the difficult problems of modern governments is how to get rid of such contamination. Before World War II, *Hungary* was not an industrial country, yet, at that time, the Society of Engineers and Architects started a movement for the elimination of smoke. Present day communists say that a reform of fueling was prevented then by the capitalistic owners of the factories, since such a reform would have been expensive for a few years after its introduction. The air of Budapest was repeatedly tested for its sulfur and carbon content. Comparing the results of recent and previous examinations it was found that between 1933 and 1953 the sulfur content of that metropolis increased by 45.5%, and the soot content by 55.5%. It was also found that very soon the air of such industrial areas of that country as Ózd, DiósgyÖR, Pécs, etc. will be so deteriorated that the mortality rate of these towns will increase to the former death level of Glasgow in 1913.

Inhabitants of the *Reef Islands,* in the British Solomon Islands Protectorate, have been using their own ingenious method for the *preservation of breadfruit* (Artocarpus altilis), which is their staple diet. The fresh food contains much water (80%), and it usually rots promptly. Natives who want to keep it for months, first cook the fruit, then peel it, remove its seeds, and cut it into small pieces which are arranged on a net to a depth of 4-5 inches. The net is suspended over a smokeless fire, and the pieces are turned for about 6 hours. The dried breadfruit will keep for 12 months when stored in coconut baskets. It is very rich in starch (72%) ac-

cording to a chemical analysis made at Noumea (New Caledonia).

Some time ago much was written about the paleontological findings at a *Borneo cave.* Recently, it was found that the so-called *Piltdown man* (skull and jaw) was much younger than originally published. In fact, the method of radiocarbon dating of fossils showed that the jaw could not be more than about 400 years old, and the skull not more than 800 years old at the most. In other words, the Piltdown Man became *another hoax,* according to Dutch and British announcements.

Venereal diseases, especially syphilis, are on the increase in the *Philippine Islands* (since 1954). In 1958, the percentage of VD among the new patients at the Manila Rapid Treatment Center (at San Lazaro Hospital) reached the rate of 26.1%. In three months, 450 persons appeared for treatment, among them many boys (87%) between the ages of 16 and 19 years. Among these boys, 12% were *addicts to Marijuana;* 60% of the boys came from well-to-do families. Medical control alone cannot deal with VD. Education, especially moral education is needed. Much of the evil can be attributed to family breakdown and juvenile delinquency.

Detection of a high degree of resistance of the mosquitoes in Cucuta, Colombia, against DDT and other insecticides is the basis of much worry for public health officers. Similar *foci of DDT resistant mosquitoes* were found in the Ciudad Trujillo in Dominica, and at various points of Venezuela. With the increase of the Aedes aegypti population in the *Latin American countries,* sooner or later the Western Hemisphere will face new outbreaks of yellow fever. Recent reports point to Trinidad as another danger spot in the yellow-fever control.

Several British delegations were sent to *East Africa* with the aim to find ways for the higher education of the natives. The latest report of a "working party on higher education of East Africa" contains four recommendations. The Royal Technical College at *Nairobi* should be reorganized at once, and become a university college of a new type. An inter-territorial *university college* should open in Tanganyika at *Morogor* not later than 1965-66. A *University of East Africa* should be created by 1966 which would amalgamate all the existing colleges (Makerere College, etc.) By the way! The *South African Medical and Dental Council* questioned the government's policy by which non-white medical practitioners get less pay for the same type of work than the white practitioners. The *differential salary scale* seems to be against the ethical rules of the Medical Council (and perhaps against good government, too).

From the Animal Research Institute of *Ottawa* comes the news that *radioactive strontium and caesium* can be easily removed from the milk with the use of a cation exchanger bed through which the milk is passed. The bed is regenerated with a mixture of calcium and sodium chloride. After treatment, the milk's flavor does not change a bit. The chemical element strontium has a number of isotopes (with atomic weights, 84, 86, 87, 88, 89, 90), but only the strontium —90 (and 89) is radioactive among them. This isotope has a long life of activity, about 30 years. It is one of the residual substances of atomic fissions. When it is inhaled or swallowed by a person it is attracted by the bone. Once it becomes part of the bone, its continued radiation will be detrimental to life. Some time ago, at various parts of the world, experiments have been conducted on how to remove the radioactive strontium from the body. Two members of the French Atomic Energy Commission introduced a method of treatment in which ion-exchange resins are used for this purpose. (NOTE: Americans were also experimenting with the removal of radiocalcium from the human body; Looney et al. in 1956 and later on.)

According to various statistical measurements, it seems that the *stature of French people* has been increasing during the last one hundred years. The average increase is 2.8 cm. for boys, and 2.4 cm. for girls between the ages of 5 years and 14 years. It

has been also observed that *Army recruits* are about *four cm. taller* nowadays than in the 19th century. In 1800, the mean height of a recruit was 1.63 meter (? the shadow of the "Little Corporal?"); in 1954 it was 1.67 m, and in 1958 it was 1.70 m. The causes of such an increase may be (a) better health, (b) richer nourishment, and (c) greater selectivity in the search for spouses. Consanguineous marriages are getting less and less frequent.

Jugoslavia's medical schools are at the universities of Zagreb (1911), Beograd (1921), and in the cities of Ljubljana (1919), Sarajevo (1946), Skoplje (1947), and Fiume or Rijeka (1955). The schools are rather well equipped, and the number of students is satisfactory. Zagreb has 1353 medical students (1957-58), but the facilities of the Beograd school are adequate for only 200 pupils. Ljubljana had 537 students, Sarajevo had 2716, and Skoplje had 420. The *Fiume Medical School* (which is still in the organizational stage) started only in 1955, with fifth-year students who were partly transfers from the Zagreb University. The clinical lectures at Fiume are held in two hospitals: the Civilian Hospital of Dr. Sobol, and the Susak Hospital.

The world of medicine and science lost an eminent man when Father Agostino *Gemelli* (1878-1959) died in Milano last July. He was a physician, a Catholic priest, a Franciscan monk and a socialist. His main subject of research was psychophysiology. During World War I, he established a Psychophysiological Laboratory for the Italian Military Aviation Service. He remained a promoter of military medicine until his death. In 1925 he founded the Catholic University of the Sacred Heart at Milano. It is also his great merit that this Milano University will now establish a Faculty of Medicine in Rome. Permission to do so was granted by Pope John XXIII in March of last year. The course of instruction will start in 1961; at that time only first-year students will be admitted. The new *medical faculty at Rome* does not wish to compete with the old State University, yet it will open many institutes, including one for human genetics.

Apparently the Russian physicians also have become alarmed about the growing rate of sterility in their country. At last April's meeting of the Institute of Obstetrics and Gynecology at Moskva, *problems of contraception and sterility* were widely discussed. It was found that one of the chief reasons for sterility in Russian women is the considerable increase in induced abortions. Hence, it was suggested that physicians must fight against abortion partly by sanitary education, partly by the promotion of anticonceptive means.

An *All-Soviet symposium on pathogenesis of tetanus* was held last June in Moskva. One of the lecturers pointed out that the purified antitetanus serum is more effective when given into the carotid artery. The tetanus infection lowers the body's resistance to other infections (and vice versa). Staphylococcic sepsis is especially serious in tetanus. Interesting is the observation that in tetanus an intrabronchially inoculated staphylococcic contagion will cause lung abscesses with metastases to other organs. A member of the Kiev Epidemiological Institute found that the toxins of tetanus and of botulinus are perhaps antagonistic since both the local and general symptoms of the tetanus intoxication are weakened when the two toxins are simultaneously injected at the same site.

The *Gamalei Institute of Epidemiology and Microbiology* in Moskva is deeply engaged in studies which could eventually result in the production of practical combinations of various antigens, of so-called *associated vaccines*, to be used for *active immunization* against infectious diseases of children, against wound infections (protection in case of battle injuries!!), etc. At present, experiments are carried out with combined toxoids of Staphylococcus, Vibrio septicus, and Vibrio histolyticus, Clostridium tetani, perfringens, and edematiens. Animal inoculations and trials on human volunteers showed that these various preparations are very effective; that they result in high titres

of antibodies against the specific microbes, and that the mixing of the antigens does not result in any inhibition of antibody production. In addition to the *combined vaccine against wound infection and gas gangrene,* the Institute also prepared such combinations as pertussis-diphtheria-polio, diphtheria-tetanus-polio, typhoid-paratyphoid-cholera, etc. The studies will continue for the next two years. (The results of these studies on active immunization against wound infection by means of tri-, tetra-, and penta-toxoids have been recently published in a large monograph of the Institute.)

There is now *no private practice in China.* Every physician qualified from a modern medical college or school, or every traditional physician is a full-time salaried employee of the State. The minimum salary of a physician is 40 Yuans a month. Those who qualify from medical colleges will get a minimum salary of 60 Yuans per month. The maximum pay of a professor varies by provinces, but it rarely exceeds 400 Yuans per month. This is adequate, since the rent is nominal, and the cost of food per month is about 15 Yuans. Clothing is particularly expensive. Few possess their own car. Cars are provided by the medical institutions as the need arises.

By the way! As a comment to our willingness to adopt the *metric system* let us recall that Red China had preceded us in the metrological modernization. An order (dated 25 June 1959) made the metric system obligatory for the whole China. Only a few of the older measures can be still mentioned: the *shin* for half a kilogram, the *li* for half a kilometer, and the *sheng* for half a liter.

What happened to the Indian *medicinemen in the U. S.?* They are gradually replaced by medical personnel specially provided for the care of the American Indian's health. The overall care of this program is in the hand of the U. S. Public Health Service since July 1, 1955. In the subsequent four years, the Public Health Service provided physicians, pharmacists, sanitation staff, dentists and dental assistants, public health nurses, health education staff, medical social workers, nutrition and dietetic staff, maternal and child health specialists, etc. All these persons belong to the Indian Health Division of the Public Health Service, and half of the employees are themselves of Indian descent. In spite of the improvement of the health care for the Indians, their needs are still many. Their average age of death is 39 years, compared with 69 years for the U. S. population as a whole. Most frequent causes of the Indian deaths are tuberculosis, enteric diseases, and accidents.

In our modern age, even the conservative universities of Oxford and Cambridge must face the question: Should German and Russian replace the *compulsory Latin for entrance* to these universities? Many "scientists" believe that Latin is a waste of time. Scientific papers are very rarely published nowadays in Latin. Yet, there are some important reasons why Latin should be kept. Latin is an *immense asset to the scholar* with a wide knowledge of the literature, philosophy, art and history of Europe and America, even if the "scientists" are not interested in Latin grammar and in whom it may create an anti-cultural reflex. Latin should be retained as a tendency to *maintain humanities* as the foundation of a wider and more general pre-scientific education. . . . *Multa paucis!*

The Sir Henry Wellcome Medal and Prize

COMPETITION FOR 1960

THE competition is open to all medical department officers, former such officers, of the Army, Navy, Air Force, Public Health Service, Veterans Administration, The National Guard and the Reserves of the United States, commissioned officers of foreign military services, and all members of the Association, except that no person shall be eligible for a second award of this medal and prize and no paper previously published will be accepted.

The award for 1960, a medal, a scroll, and a cash prize of $500, will be given for the paper selected by a committee composed of the Association's vice-presidents which reports on the most useful original investigation in the field of military medicine. The widest latitude is given this competition, so that it may be open to all components of the membership of the Association. Appropriate subjects may be found in the theory and practice of medicine, dentistry, veterinary medicine, nursing and sanitation. The material presented may be the result of laboratory work or of field experience. Certain weight will be given to the amount and quality of the original work involved, but relative value to military medicine as a whole will be the determining factor.

Each competitor must furnish six copies of his paper which must not be signed with the true name of the author, but are to be identified by a *nom de plume* or distinctive device. These must be forwarded to the Secretary of the Association of Military Surgeons of the United States, Suite 718, 1726 Eye St. N.W., Washington 6, D.C., so as to arrive at a date not later than 20 June 1960, and must be accompanied by a sealed envelope marked on the outside with the fictitious name or device assumed by the writer and enclosing his true name, title and address. The length of the essays is fixed between a maximum of 10,000 words and a minimum of 3000 words. After the winning paper has been selected the envelope accompanying the winning essay or report will be opened by the Secretary of the Association and the name of the successful contestant announced by him. The winning essay or report becomes the property of the Association, and will be published in MILITARY MEDICINE. Should the Board of Award see fit to designate any paper for "first honorable mention" the Executive Council may award the writer life membership in The Association of Military Surgeons, and his essay will then also become the property of the Association.

NOTES

Timely items of general interest are accepted for these columns. Deadline is 1st of month preceding month of issue.

Department of Defense

Ass't Secretary (Health & Medical)—Hon. Frank B. Berry, M.D.
Deputy Ass't Sec'y—Hon. Edw. H. Cushing, M.D.

ARMED FORCES DAY

May 20 will be observed as Armed Forces Day. By Presidential Proclamation of March 5, 1957, the third Saturday of each May will be so observed.

This year as in the past few years "open house" will be held at many military and naval installations during the week of May 14-22. The big day will, of course, be May 20 at most installations.

Millions of people will have an opportunity to see what is happening to the billions of dollars being spent for POWER FOR PEACE. This is a serious business in a world where too many people do not respect the rights of their fellow men.

Americans want peace—but they want "peace and understanding in freedom" as President Eisenhower has indicated. We do not want the kind of peace that is obtained by the crushing heel of despots whose ideologies conflict with the better nature of man, but a peace that will permit men to have some thoughts of their own even though they may conflict with persons in power.

We will hear more about Armed Forces Day in the weeks to come.

SELECTIVE SERVICE

The Selective Service has been asked to provide 6000 for March induction into the Army. The total number inducted since resumption of Selective Service in September 1950 is 2,509,430.

Army

Surgeon General—Lt. Gen. Leonard D. Heaton
Deputy Surg. Gen.—Maj. Gen. Thomas J. Hartford

GENERAL HOSPITALS

Seven Army Hospitals will again be named "General" hospitals. This has been done to avoid confusion with the new memorially named hospitals throughout the Army.

The General Hospitals which will be under the immediate jurisdiction of the Surgeon General of the Army are: Walter Reed General Hospital, Washington, D.C.; Valley Forge General Hospital, Phoenixville, Pa.; Brooke General Hospital, Fort Sam Houston, Texas; William Beaumont General Hospital, at El Paso, Texas; Fitzsimons General Hospital at Denver, Colorado; Letterman General Hospital, San Francisco, California; and Madigan General Hospital, Tacoma, Washington.

HONOR GRADUATES AMSS

Captain Elsie G. Nickel, ANC, was named honor graduate of the Advanced Military Nursing course at the Army Medical Service School. She has the distinction also of graduating in first place in the Ward Administration and Supervision course in 1956. She has been assigned to First Army Headquarters, Governors Island, New York, as one of four Army Nurse Corps Recruiting Officers.

Captain Samuel C. Jefferson, MC, was

U. S. Army Photo

MAJ. GEN. WILLIAM E. SHAMBORA (left), Commanding General, Brooke Army Medical Center, presents the Skinner Medal and Certificate to CAPTAIN SAMUEL C. JEFFERSON, Medical Corps, U. S. Army.

U. S. Army Photo

COL. JOSEPH CARMACK, USA, Ret. (left), presents a medal bearing his name to 1ST. LT. JAMES MEDRIC EUBANKS, MSC, USA.

awarded the Skinner Medal for being the top ranking medical officer in the Advanced Course at the School.

First Lieutenant James M. Eubanks, MSC, was presented the Carmack Medal for being the highest in scholastic rating of the Medical Service Corps officers attending the Advanced Course. The presentation was made by the founder of the Medal, Colonel Joseph Carmack, a former Medical Service Corps Officer of the Army.

AWARD MADE

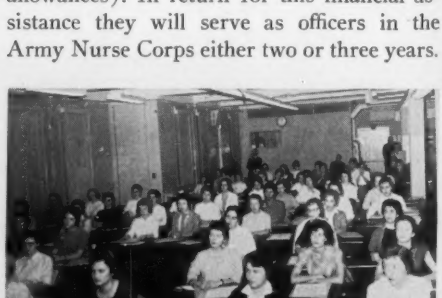
The Evangeline G. Bovard Award for high professional achievement in the field of nursing was shared this year by two Letterman nurses, Major Iola R. McClellan, ANC, and Captain Therese M. Brown, ANC. This year's award totalled $600; eventually the award will be $1200.

Colonel Robert Skelton, MC, U. S. Army, Retired, set up the award in memory of his wife, an Army nurse. The first award was made in 1957. That year and each year since, the award has been presented at Letterman General Hospital by Colonel Skelton. A command ceremony with Brigadier General A. L. Tynes, Commanding General of the hospital, in charge was held for the presentation.

NEW ARMY NURSES

Sixty-six recent graduates of civilian nursing schools recently became members of the Army Nurse Corps in a ceremony at Brooke Army Medical Center. The Commandant of the Army Medical Service School, Brigadier General James L. Snyder, administered the oath of office.

These nurses were all participants of the Army Student Nurse Program under which they were enlisted members of the Women's Army Corps Reserve for the final one or two years of their nurses training (with pay and allowances). In return for this financial assistance they will serve as officers in the Army Nurse Corps either two or three years.



U. S. Army Photo

GRADUATE NURSES IN ARMY STUDENT NURSE PROGRAM PREPARE TO TAKE OATH OF OFFICE AS COMMISSIONED MEMBERS OF THE ARMY NURSE CORPS.

WORKSHOPS IN NURSING

Workshops have been scheduled by the Department of Nursing, Walter Reed Army Institute of Research in "Outpatient and Army Health Nursing" (March 6-12), and "Physiological Basis of Nursing Practice" (May 16-21). Another course, "Operating Room Nursing," was held January 11-16.

These courses are planned by members of the Department of Nursing of the Walter Reed Army Institute of Research (directed by Major Harriet H. Werley, ANC) and the Nursing Service, Walter Reed General Hospital (directed by Lt. Colonel Ruth P. Taylor, ANC).

Although the courses are intended primarily for Army Nurse Corps officers on active duty who have at least one year of graduate nurse experience, a limited number of spaces are available to Reserve and National Guard officers not on active duty, to national nursing organizations for civilians in related nursing specialties, and to representatives from other federal and military nursing services.

CHIEF NURSE WRGH

Lt. Colonel Emilie K. Jensen has been appointed as Chief Nurse, Walter Reed General Hospital, Washington, D.C.

Colonel Jensen, recently Third Army Chief Nurse, was Chief Nurse of the 9th Field Hospital in Europe during World War II and Chief Nurse of the Eighth Army in Korea from 1954 to 1955.

APPOINTMENT

Brig. General Frank E. Wilson, MC, USAR, has been appointed by the president of the Reserve Officers' Association to membership on a special committee to develop a Reserve Officer Exchange program between the Reserve Officers' Association and the Congress of Inter-Allied Reserve Officer (CIOR).

Dr. Wilson is Executive Vice President-Secretary of the Joint Blood Council, Washington, D.C., and a member of the Executive Council of the Association of Military Surgeons of the United States.

DELIVERS ADDRESS IN PAKISTAN

Colonel Roland I. Pritikin, MC, USAR, of Rockford, Illinois, recently gave one of the principal addresses at the Golden Jubilee of the founding of the Henry Holland Eye Hospital, Shikarpur, Sind, West Pakistan. He is president of the Henry Holland Hospitals Alumni Association and Henry Holland Mission Hospitals Fund which consists of the American Eye Surgeons who have been going to Shikarpur to do eye surgery since 1911.

Dr. Pritikin was accompanied by Colonel Kenneth Somers, MC, USA, Assistant Chief, Eye Clinic, Walter Reed General Hospital, Washington, D.C. The two are making a study of zonulysis in cataract surgery.

Navy

Surgeon General—REAR ADM. BARTHOLOMEW W. HOGAN

Deputy Surgeon General—REAR ADM. EDWARD C. KENNEY

ASSIGNMENT BUMED

Lieutenant Commander John H. Bing, MSC, has been assigned as Director, Hospital Administration Division, Bureau of Medicine and Surgery. He succeeds Commander S. G. Brenne, MSC, who has been assigned on the Staff of the Commander-in-Chief, Atlantic Fleet, Norfolk, Va.

MCLESTER AWARD PRESENTED

Upon his return from Viet Nam, Dr. Robert Van Reen of the Dental Division of the Naval Medical Research Institute, Bethesda, Maryland, was presented with the McLester Award, recognizing his contributions in the science of nutrition.

He was in Viet Nam when the award was originally presented in absentia at the 66th Annual Convention of the Association of Military Surgeons on 11 November 1959,

Official Navy Photo

CAPT. C. A. OSTROM, DC, USN, Head, Dental Div., NMRI, presents award to DR. R. VAN REEN.

with Captain O. E. Van Der Aue, MC, USN, Commanding Officer of the Naval Medical Research Institute, accepting the award for him.

Dr. Van Reen served as Laboratory Director for the Inter-Departmental Committee on Nutrition for National Defense during his two-month stay in Viet Nam.

The recipient of the award served with a team of fifteen scientists drawn from both U. S. government and university staffs. Under the primary sponsorship of the U. S. Departments of Defense and Health, Education, and Welfare, this team was selected to conduct a survey at the request of the Vietnamese government. This type of survey is part of a broad program to acquaint American scientists with health problems throughout the world and to aid technically underdeveloped countries in their specialized problems of under-nutrition.

The team travelled throughout South Viet Nam carrying out physical and dental examinations at military establishments, fishing villages, orphanages, refugee areas, hospitals and mountain villages. To supplement the information gained through physical examinations, specialized members of the team made biochemical tests on blood and urine samples, determined the dietary habits of the various groups studied, and investigated the methods of food preservation and distribution in the country. One of the functions of the nutrition survey was to teach the local personnel the technics of evaluating nutritional status so that the studies could be continued after the departure of the American team. To this end, a complete biochemical laboratory was established in Saigon by the Committee and was donated to the Vietnamese government at the conclusion of the study.

Dr. Van Reen stated that the main staple of the diet in Viet Nam, as in other countries of the Far East, is polished rice. This is supplemented by a large variety of vegetables and smaller quantities of sea foods, chicken, pork, or beef. One of the unique features of the diet is the widespread use of a "Vietnamese Sauce" or *Nuoc Mam*, a salty sauce prepared by fermenting a mixture of fish and salt for periods of nine months to a year. The resulting solution is rich in nitrogen and served as a good substitute for the regular protein foods.

JAPANESE GARDEN MEMORIAL

The U. S. Naval Hospital, San Diego, California, will soon have a memorial in the form of a pool and Japanese garden. A bequest contained in the last will and testament of Mr. Tamme Kashiwabara, a native of Japan, who died in 1956 at the age of eighty-nine, provides $5,000 for this memorial.

The legacy of $5,000 was made to "United States Navy Hospital." No particular hospital was mentioned so Rear Admiral Hogan, Surgeon General of the Navy, recommended that the memorial be built at the San Diego Naval Hospital since there are many Japanese in that area.

Little is known about Mr. Kashiwabara. He served in the U. S. Navy from 1896-1899, and during the Spanish-American War served aboard the USS *New York* as mess attendant. His service record shows no evidence of ever being a patient or on duty

at any U. S. Naval Hospital. A woman doctor who employed him for over thirty years, a lawyer who represented him for over ten years, nor the Mayor of Nagasaki where he was born, could shed any light on the life of Mr. Kashiwabara or reveal why he should make the bequest.

The Surgeon General has wisely chosen San Diego Naval Hospital as the place for the memorial.

COURSE PRESENTED ON TV

What is believed to be the first inter-medical-military television network system was inaugurated when the U. S. Navy Dental School, National Naval Medical Center, Bethesda, Maryland, presented an hour and a half course recently.

The presentation, a course in casualty care, was made by Captain H. J. Towle, Jr., DC, USN, to the inservice training program of the National Naval Medical Center Nurses and personnel of the Navy Dental School, Bethesda, Maryland.

Transmission was made over the inter-medical-military network to the Walter Reed Army Medical Center, the Army Hospital at Fort Meade, Maryland, and the Air Force Hospital, Andrews Air Force Base, Maryland.

EDUCATIONAL PROGRAM FOR NURSES

A new educational program for active duty Navy Nurse Corps Officers will be conducted at the U. S. Naval Medical School, National Naval Medical Center, Bethesda, Maryland.

The objective of the program is to provide improved patient care for military personnel and their dependents through the continuing professional development of Nurse Corps Officers.

The program will include the planning and conducting of conferences, institutes, short courses, seminars and workshops in the various phases of patient care, supervision, teaching and nursing service administration.

The first workshop, "Planning Orientation Programs," commenced February 14. Commander Rita D. Clark, NC, was assigned as Head, Nurse Corps Training Section at the School, and will direct this new program.

RETIRED

Recently retired: (Medical Corps)—Captains Ralph K. Hoch, Hugh V. O'Connell, Edward H. Taylor; (Medical Service Corps)—Lieutenant Commanders Leland E. Byers, Vester J. Helms, F. C. Johnson, Clair L. Patterson, John W. Stephens.

Air Force

Surgeon General—MAJ. GEN. OLIVER K. NIESS

Deputy Surg. Gen.—BRIG. GEN. JOHN K. CULLEN

MEDICAL SERVICE SCHOOL, USAF

The Gunter Branch, School of Aviation Medicine was redesignated the Medical Service School, U. S. Air Force, on January 4. It had recently been reassigned from the Air University to the Air Training Command as a part of the USAF Aerospace Medical Center now located at Brooks Air Force Base, Texas.

The school was originally established in 1950 to meet the training requirements of medical personnel during the Korean Conflict. The present mission of the school is to conduct all military medical training for officers and airmen except that which is directly related to aviation medicine; to provide the necessary administrative support and supervision for all personnel assigned or attached to the School; and to organize, equip and train, on a continuing basis, a Medical Disaster Assistance Team.

At the present time some 36 courses are offered at the School. Of these courses 12 are for officers, 10 are for advanced or supervisor level technicians, and 14 are for apprentice-specialist airmen. The average student census at the School is approximately 1000. Over 41,000 students have been trained.

ASSIGNMENT

Brig. General Robert S. Brua, USAF, MC, has been designated as MATS Surgeon. Headquarters of MATS is at Scott Air Force Base, Illinois.

NAMED PROFESSIONAL CONSULTANT

Colonel Don S. Wenger, has been appointed Chief Professional Consultant to the Surgeon General of the Air Force. Prior to this appointment he served as Deputy Commander and Chief, Department of Surgery, USAF Hospital, Lackland Air Force Base, Texas. He is rated as a Senior Flight Surgeon.

Public Health Service

Surgeon General—LEROY E. BURNEY, M.D.
Deputy Surg. Gen.—JOHN D. PORTERFIELD, M.D.

APPOINTMENT

Dr. Arnold B. Kurlander has been named The Assistant Surgeon General of the Public Health Service. He was formerly Deputy Chief of the Service's Bureau of Medical Services. In his new assignment he will be third in command.

Dr. Kurlander is a native of Cleveland, Ohio, and a graduate of Western Reserve University and Ohio State University School of Medicine. He holds a Master of Public Health degree from the University of Michigan. He has been a member of the Commissioned Corps of the Public Health Service since 1940.

RESEARCH

Legislation designed to provide broader grants to medical, dental, and public health schools for medical and health research and research training was recently proposed by the Secretary of Health, Education, and Welfare, Arthur S. Flemming. The legislation would authorize the Surgeon General of the Public Health Service to make grants for the general support of the research programs of institutions, as well as the grants now authorized to support specific projects by individual applicants.

The funds for the general grants would be obtained by setting aside a uniform percentage of the appropriations to the National Institutes of Health for research grants which in fiscal year 1960 totalled $200 million.

RADIOLOGICAL HEALTH

The Division of Radiological Health of the Public Health Service has been given the responsibility for the collection of data pertaining to environmental radiation levels. Through a monthly publication initiated March 1, this information will be disseminated to State Health Departments, scientists working in environmental radiation and related fields, other interested agencies, and the public.

Each quarterly issue of the publication, beginning July 1, will contain analyses based on information previously collected.

The Public Health Service plans to increase the number of milk sampling stations which have been set up for the study of fallout from 12 to 60.

There will also be an expansion of the training program in radiological health at the Robert A. Taft Engineering Center at Cincinnati and of the research in radiation effects by the National Institutes of Health, Bethesda, Maryland.

MENTAL HOSPITAL RESIDENTS

During 1959, for the fourth consecutive year, there was a drop in the number of resident patients in public mental hospitals in the United States. At the end of the year there were 542,721 patients in 277 hospitals. This was 2142 fewer patients than at the end of 1958.

Dr. Robert H. Felix, Director of the National Institute of Mental Health attributed this change in trend in part to the philosophy governing hospital administration, the public attitude toward mental illness, new and improved treatment methods, including

the wide use of psychoactive drugs, and to the outpatient clinics.

Said Dr. Felix, "There is surely reason for encouragement in the mental hospital population figures, but these same statistics show there are still over half a million patients in our public mental hospitals. The cost of their care is in excess of $800 million a year though expenses are kept to an absolute minimum."

TO CLOSE HOSPITAL

Manhattan Beach Public Health Service Hospital, Brooklyn, New York, will be closed on June 15. This is one of 16 general and special hospitals operated by the Public Health Service.

This hospital which has been operated for the care of tuberculosis patients has seen a reduced patient load with a rising cost of operation. Since 1955 the average number of patients has declined from 339 to 210. The cost of operation rose from $1,334,000 to $1,610,000.

It is planned to transfer the remaining patients to other hospitals, either Public Health Service hospitals or non-service hospitals.

Veterans Administration

Chief Medical Director—WILLIAM S. MIDDLETON, M.D.
Deputy Chief Med. Dir.—R. A. WOLFORD, M.D.

SENIOR MEDICAL INVESTIGATORS

Dr. Oscar Auerbach, East Orange, New Jersey, Veterans Administration hospital, and Dr. Ludwik Gross, Bronx, New York, VA hospital, have been appointed as senior medical investigators, a position for full-time medical or dental research and reserved for distinguished research workers. Only four persons have been appointed since the position was created in January 1959.

Dr. Auerbach is chief of laboratory service at the East Orange VA hospital and is also associate professor of pathology at New York Medical College.

Dr. Gross served in the Army Medical Corps during World War II. He engaged in postgraduate clinical training at the Pasteur Institute before coming to the United States. Both Dr. Auerbach and Dr. Gross are known for their cancer research.

STIMULATION ASSISTIVE EXERCISES

A new method of nerve and muscle reeducation, for patients whose arms are paralyzed as a result of strokes, has been developed by Dr. Harry T. Zankel, chief of physical medicine and rehabilitation at Durham, N.C., Veterans Administration Hospital.

Stimulation Assistive Exercises (S.A.E.) consists of a series of electrical impulses administered through electrodes on muscles of the arm and forearm and is combined with exercise. The electrical stimulus is applied ten times per minute for thirty minutes at least twice a day while the patient is urged to attempt to move the paralyzed muscles. Twenty seven patients have been treated by this method by Dr. Zankel who reports that most of them showed improvement.

Miscellaneous

A VISIT TO RUSSIA

Three American pathologists recently completed a three-week tour of pathology laboratories in Russia. This was the last group of physicians to enter Russia on the Lacy-Zarubin mutual exchange agreement. However, it was the first group of pathologists.

The American team was comprised of Dr. Frank Hartman, late of the Ford Hospital in Detroit, and now Research Advisor to the Surgeon General of the U. S. Air Force; Dr. Joe M. Blumberg, a Deputy Director of the Armed Forces Institute of Pathology, and Dr. John Edgcomb, National Institutes of Health.

Dr. Blumberg in mentioning some of his

U. S. Army Photo

DR. JOE M. BLUMBERG, DEPUTY DIRECTOR, ARMED FORCES INSTITUTE OF PATHOLOGY.

experiences stated that the study of pathology in Russia is on a par with that in the United States. He praised the ability of Professor Strukov, pathologist at the Moscow Medical School.

The Academy of Medical Sciences under the Russian Academy of Science, controls everything in medicine in the Soviet Union. It is stated that one-sixth of the Soviet budget goes to health services.

The primate colony at Sukhumi which has been in existence forty years is the oldest and best in the world. Here extensive studies on the effects of radiation, genetics, and other subjects are studied. Dr. Blumberg mentioned the ability of the scientists to induce coronary thrombosis in the primates by upsetting their habits and producing a neurosis.

At the Institute of Emergency Surgery in Moscow the bodies of persons who have died suddenly in that city are bled and after extensive laboratory examinations of the blood and an autopsy this non-coagulating blood is used for transfusions. About 15 percent is rejected. This work started by Professor Yudin has yielded about 30 tons of blood in approximately thirty years. The blood must be obtained within four hours of death.

One of the problems of the medical schools is that of obtaining cadavers. Of course, the U. S. Medical schools have a similar problem.

Extensive work is being done on cell culture. Dr. Blumberg saw a malignant melanoma growing and it is questionable if this has been accomplished in the United States.

One of the major communicable disease problems in Russia is influenza. As in the United States cardiovascular disease and cancer are at top of the list of causes of death.

An interesting final note was that about half of the Russian scientists speak and read English which has been a great factor in their knowledge of achievements in the Western World.

GRANT TO ACS

In order to inaugurate a program for improving the medical management of the surgical and injured patient the John A. Hartford Foundation, Inc., of New York has granted $146,275 to the American College of Surgeons, Chicago, Illinois.

Dr. I. S. Ravdin, Chairman of the Board of Regents of the College said, "This grant will permit the College to enlarge its long-established activities in the field of trauma, both at the national and local levels."

ELECTED TO OFFICE

Dr. Herald R. Cox, Director of Virus Research, Lederle Laboratories Division, American Cyanamid Company, has been elected president of the Society of American Bacteriologists. His term will begin July, 1960.

Dr. Cox, who has been associated with Lederle since 1942 has served with the Rockefeller Institute for Medical Research and the U. S. Public Health Service. For over ten years he has been actively engaged in the research on oral poliomyelitis vaccine.

TUBERCULOSIS

Most of us firmly believe that tuberculosis is conquered, that modern drugs and surgery have mastered the dreaded "white plague." That would be great news—if it were true! The sad fact is, about 12,000 Americans will die of tuberculosis in this twelfth year since we discovered the drug treatment and many thousands of others will be temporarily or permanently disabled. Some 63,000 new active cases were found in our country this past year, and tuberculosis is still our commonest contagious cause of death.

ROGER S. MITCHELL, M.D., "Tuberculosis is Still a Killer." *This Week*, Nov. 15, 1959.

LEPROSY RESEARCH LABORATORY

The Johns Hopkins-Leonard Wood Memorial Joint Leprosy Research Laboratory was recently dedicated at the Johns Hopkins School of Hygiene and Public Health, Baltimore, Md. The new laboratory will replace the one which has been maintained by the Memorial for 13 years at the Harvard Medical School. The Leonard Wood Memorial maintains an office at 1382 M St., N.W., Washington, D.C.

Dr. John H. Hanks, Director of the new laboratory, said the shift was made to take advantage of broad international representation among students at the Johns Hopkins School of Medicine. Leprosy is prevalent in many foreign countries.

Rear Admiral Cecil B. Galloway, MC, USN, and Dr. Howard T. Karsner, both of the Bureau of Medicine and Surgery of the Navy, were present at the dedication.

THE JOINT BLOOD COUNCIL

The Joint Blood Council is a non-profit organization formed and supported by the American Association of Blood Banks, the American Hospital Association, the American Medical Association, the American Red Cross, and the American Society of Clinical Pathologists. Offices are maintained at 1832 M Street, N.W., Washington 8, D.C., with an Executive Vice-president, Dr. Frank E. Wilson, in charge.

The primary purpose is to "establish a national blood program in order to assure an adequate supply of blood and blood derivatives to the civilian and military population at all times of peace or emergency."

In 1958 a directory of Blood Transfusion Facilities and Services was prepared and distributed. This is now being revised and will be issued in the spring. It will list hospitals using blood as well as hospital blood banks, Red Cross centers and community blood banks which collect, process and distribute it.

Technical and operating procedures of blood banks and hospital transfusion services as well as sources and usage of blood are to be recorded. Also included will be approvals, supervision, reciprocity exchange systems and other services such as tissue storage banks.

BIO-ANALYSTS BOARD

The American Board of Bio-Analysts was founded and incorporated in the state of New Jersey, and registered in Washington, D.C., as a National Organization.

The purposes for which this Board is formed are to establish a National Society of qualified specialists in the Science of Bio-Analysis; encourage greater research; conduct seminars; publish scientific papers; and to issue proper identification to those selected and certified as Diplomates of the Board.

Prior to July 1, 1960, the American Board of Bio-Analysts will certify applicants who meet the basic requirements: a baccalaureate degree pertinent to the science of specialization and ten years experience, or, a graduate degree and at least five years experience.

The examination will be on a graduate level, and will be held three times a year, in various geographical locations.

The following officers were elected to serve the Board for the next three years: Melvin S. Chuker, M.D., President, Tucson, Arizona; Herbert Ramsey, D. O. Vice-President, Kansas City, Missouri; William H.

Krieger, Sc.D., Secretary, East Riverdale, Maryland; E. W. Williams, Ph.D., Treasurer, Enid, Oklahoma; C. A. Bartholomew, Ph.D., Provost, Red Bank, New Jersey; Clayton J. Ettinger, Chancellor Emeritus, Detroit, Michigan.

Qualified Bio-Analysts desiring certification as a Diplomate, may contact the Secretary of the Board, William H. Krieger, Sc.D., 5407—56th place, East Riverdale, Maryland.

AMERICAN COLLEGE OF NUTRITION

Formation of the American College of Nutrition was announced recently by a group of New York and New Jersey specialists in nutrition, metabolic diseases and gastroenterology. Fellows of the new college will be entitled to use the initials "F.A.C.N." as part of their signature.

For further information contact the Secretary-Treasurer, Robert A. Peterman, M.D., 19 Oak Street, Livingston, N.J.

SCHOLARSHIPS AVAILABLE

Sons or daughters of deceased or totally disabled airborne troopers may be eligible for scholarships in college up to $400 per year for four years. Deadline for applications is April 15. If interested address THE AIRBORNE ASSOCIATION, P.O. Box 5, Fort Bragg, N.C.

CLEFT LIP AND CLEFT PALATE

It is expected that about 4000 babies will be born in 1960 in the United States with cleft lip and cleft palate. Advances have been made in surgery so that it is possible to offer more hope for these children in the matter of repair. In addition speech therapists today know how to teach these children so that they develop good speech.

A recent brochure, *Bright Promise,* should be valuable to those persons who are interested in the subject of cleft lip and cleft palate. Copies may be obtained for 25¢ by addressing the Publications Office, National Society for Crippled Children and Adults, 2023 West Ogden Avenue, Chicago 12, Ill.

JUVENILE DELINQUENCY

A Look at Juvenile Delinquency (Children's Bureau Pub. No. 380/60) is a 50-page booklet which explains the complexity of the problem. Prepared as a guide to the general public, and particularly community leaders, the new publication emphasizes prevention.

Single copies of the booklet can be purchased from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C., for 25¢.

REHABILITATION

Rehabilitation of The Disabled In Thirty-Seven Countries of The World is a 153-page publication which gives "background information on the status of medical and related services for the disabled in certain countries on which such information is relatively available."

Copies of this publication can be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D.C., for 55¢ (check or money order—no stamps).

MERCK INDEX

The seventh edition of The Merck Index, a chemical reference book, is scheduled for publication this month. The new edition contains 1600 pages of text covering nearly 10,000 descriptions of individual substances, more than 3300 structural formulas, and about 30,000 names of chemicals and drugs alphabetically arranged and cross-indexed—10,000 more than its predecessor.

The price is $12 per copy. Orders may be addressed to the Publications Department, Merck & Co., Inc., Rahway, N.J.

WORLD HEALTH ORGANIZATION PUBLICATIONS

Tuberculosis—Bull. Vol. 21, No. 1/59. $2.00.

Malaria and Insecticides, Bull. Vol. 20, No. 5/59. $2.00.

Mental Health Problems of the Aged. TRS No. 171/59. $.60.

PG Training in Public Health Aspects of Nuclear Energy. TRS No. 154/58. $.60.
Zoonoses. TRS No. 169/59. $.60.
Bilharziasis—WHO Chronicle V. 13#1. $.30
European Technical Conferences, Food-Borne Infections & Intox. TRS No. 184/59. $.30.
Role of Hospitals—Med. Care. TRS No. 176/59. $.30.
Immunological & Hematological Survey. TRS No. 181/59. $.30.
Iron Deficiency Anemia. TRS No. 182/59. $.30.

Any of above may be obtained from the Columbia University Press, 2960 Broadway, New York 27, N.Y.

GOVERNMENT PUBLICATIONS

Digest of State Air Pollution Law. No. FS 2.2:A. 7/11. $.75.
Strike Back at Stroke. No. FS 2.6:St 8. $.40.
The Older Person in the Home. No. FS 2.2:01. $.20.
Infant Care. No. FS 3.209: 8/3. $.15.
Little Strokes-Hope Through Research. No. PHS 689. $.10.
Housing for the Elderly. No. HH 2.2:H 81/7. $.15.
First Aid Guide. No. A 13.36:F 51/5/958. $.25.
Basic Civil Defense. No. Pr 34.761/4:3-2. $.35.
What Consumers Should Know About Food Additives. $.15.

Any of the above may be obtained through the Superintendent of Documents, Gov't. Printing Office, Washington 25, D.C. Send money order or check (no stamps).

CONFERENCE

The First Annual Michigan Conference on Comparative Medicine will be held March 21-22 at Kellogg Center for Continuing Education, Michigan State University, East Lansing.

This conference is being sponsored jointly by the Michigan Department of Health, the University of Michigan Medical School, the Wayne State University College of Medicine, and the College of Veterinary Medicine at Michigan State University.

MEETINGS

The 37th Annual Conference of the American Physical Therapy Association will be held at the Penn-Sheraton Hotel in Pittsburgh, Pennsylvania, June 26-July 2. The theme is "The Physical Therapist and Industry." Further information may be obtained from the headquarters at 1790 Broadway, New York 19, N.Y.

The Pan-Pacific Surgical Association, Eighth Congress, will be held in Honolulu, Hawaii, September 27-October 5. Further information may be obtained by writing to Dr. F. J. Pinkerton, Suite 230, Alexander Young Building, Honolulu.

The American College of Surgeons 46th Annual Clinical Congress will be held in San Francisco, October 10-14, 1960. For further information write to Dr. William E. Adams, Secretary, 40 East Erie Street, Chicago 11, Ill.

DECADE OF DRUG PROGRESS

The U. S. drug industry "has placed more lifesaving drugs in the hands of the average man during the last decade than have all of the government-controlled systems of other countries combined," declared Dr. Austin Smith, President of the U. S. Pharmaceutical Manufacturers Association, recently.

PHARMACISTS, NOTE!

Texas law now requires a $10 renewal fee for all pharmacists registered in that state. This was effective August 11, 1959.

AUTO ACCIDENTS

Each accident in which a member of the Armed Forces is injured or killed costs U. S. taxpayers approximately $30,000, according to Navy estimates. *AAMVA Bulletin,* Dec/'59.

THRIFT

Notices to candidates for final examinations in medicine:

In London—Candidates must write on only one side of the paper.

In Edinburgh—Candidates must write on both sides of the paper.

Lancet, England.

Deaths

CHANEY, Thomas M., Colonel, Medical Corps, U. S. Army, Retired, died at Walter Reed General Hospital, Washington, D.C., December 29, 1959, at the age of 76.

Doctor Chaney was a native of Maryland and a graduate of the University of Maryland School of Medicine (1906). He was commissioned in the Medical Corps of the U. S. Army in 1917 and served until his retirement in March 1947. He is survived by two daughters: Mrs. Virginia C. Raff, wife of Colonel E. D. Raff, 5314 32nd St., Washington, D.C., and Mrs. Mary Booth, wife of R. O. Booth, West Palm Beach, Fla.

COSTOLOW, William E., Captain, Medical Corps, USNR, Retired, died in Los Angeles on November 22, 1959 at the age of 67. His death followed a long and progressive illness.

A native of Kirksville, Missouri, Dr. Costolow received his medical degree from the University of Pennsylvania in 1916 and served an internship at the University Hospital. During World Wars I and II he served in the Medical Corps of the U. S. Navy, and later (1946-1952) served as Commanding Officer of Naval Medical Unit 11-1. He served as a Fellow in Surgery at Mayo Foundation from 1919 to 1921, after which he associated himself with the late Dr. Albert Soiland of Los Angeles. He specialized in cancer and allied diseases as a therapeutic radiologist. He was author and contributor of many articles on cancer and allied diseases.

FARNSWORTH, Dean, Commander, MSC, USNR, Retired, died at the U. S. Naval Hospital, Bethesda, Maryland, December 27, 1959, at the age of 57.

Commander Farnsworth, a native of Kansas, was for over 16 years one of the Navy's top specialists in the field of color perception and visual engineering. He had studied at Northwestern University and New York University and had earned several degrees: A.B. in Biology, an M.A. in Theater Arts, and an M.A. in Psychology.

For many years he headed the Visual Engineering Section of the Naval Medical Research Laboratory, New London, Conn. He was responsible for the development of a fluorescent lighting fixture which greatly improved the lighting on submarines. In addition, he devised a color vision lantern known as the Farnsworth Lantern which was later adopted as the standard color vision test for the Navy.

Commander Farnsworth is survived by his wife of Bethesda, Maryland.

NOSIK, William A., Lieutenant Commander, Medical Corps, U. S. Navy Reserve, died of coronary occlusion at Cleveland, Ohio, December 6, 1959, at the age of 48.

Doctor Nosik was a native of Milwaukee, Wisconsin. He received his medical degree from the University of Wisconsin in 1935 after which he entered on an internship at the Research Hospital in Kansas City. This was followed by a residency in neuropsychiatry at Wisconsin General Hospital and general surgery and neurological surgery at the Cleveland Clinic, Cleveland, Ohio. He entered the private practice of neurosurgery at Cleveland.

In October 1942 he entered active service in the Medical Corps of the Navy and served until March 1946. He saw service as a neurosurgeon at the Naval Hospitals at Oakland and Treasure Island in California, and later with the Fleet Marine Force with the 3rd, 5th, and 7th Fleets and the 5th Amphibious Corps in the Pacific. At the close of the Pacific campaigns he was stationed for a time in Japan.

Doctor Nosik published over 40 articles in various medical journals. He was a Diplomat of the American Board of Neurological Surgery. He is survived by his wife who resides at 1503 Burlington Road, Cleveland 18, Ohio.

VINUP, Frederick H., Brigadier General, Medical Corps, Maryland National Guard, Retired, died at Baltimore, Maryland, January 3 at the age of 74.

Doctor Vinup was a native of West Virginia. He received his medical degree from the University of Maryland in 1909. He served on the Mexican Border during 1916-1917 and later went overseas with the 29th Division, a unit of the American Expeditionary Forces in France during World War I. On return he was asked by General Reckord to reorganize the 104th Medical Regiment of the Maryland National Guard which he did with full contingent until his retirement in the grade of colonel in 1940.

He was Medical Director of Monumental Life Insurance Company since 1920; however he retired from his duties in 1958 but was still a member of the Board of Directors at the time of his death. In 1928 he was president of the Association of Military Surgeons of the United States.

Doctor Vinup is survived by his wife who resides at the home at Gibson Island, Maryland, and two daughters.

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THE AMERICAN NATIONAL RED CROSS, FISCAL YEAR, 1958-59

Services to Members of the Armed Forces, Veterans, and Their Dependents

*Financial assistance provided in loans and grants	
Total	$11,330,000
To servicemen and their dependents	$10,748,800
To veterans and their dependents	$ 581,000
Servicemen served each month at stations and in hospitals	79,500
Families of servicemen served each month in chapters	87,000
Families of veterans served each month in chapters	34,700
Patients in VA hospitals served each month by Red Cross	127,900
Families of veterans served each month at VA claims offices	12,200

* A major portion of each year's loan is repaid.

The above report gives only a small part of the great service rendered by the RED CROSS. You can aid in this great service by CONTRIBUTING TO THE RED CROSS NOW.

The Annual Business Meeting of the Association—1959

THE meeting was called to order by the President, Major General H. H. Twitchell, at 1:15 P.M., November 9, 1959 in the Grand Ballroom of the Mayflower Hotel, Washington, D.C. This was the first day of the 66th Annual Convention of the Association of Military Surgeons of the United States.

The Secretary of the Association, Colonel Robert E. Bitner, U. S. Army, Retired, gave the following report:

"I have been secretary of your Association now for a little over five years, having completed the fifth year on March 1, 1959.

"It is gratifying to me, as I am sure it is to you, to know that the enthusiasm of our members has continued to increase, that our Sustaining Membership Program has been firmly established to the mutual benefit of those members and to the Association, that our Group Health Insurance program has been well received over a period of five years, that we have been able to modernize our office equipment and procedures, and that the official journal of our Association, MILITARY MEDICINE, is a well received journal in this country and in many countries abroad. We have subscribers and exchanges with approximately thirty foreign nations which includes several of the Iron Curtain nations.

"Medicine should know no boundaries. Many of the physical ailments of man are common to all nations. It is my belief that through the medical profession and its allied professions a better understanding of our international problems can be attained, for through those groups we deal with the lowliest and the mightiest persons.

"You are all interested, as I am, in the financial situation of our Association. We have just completed our first full twelve-month fiscal year under the new arrangement where the fiscal year will end on June 30. Last year I reported on a nine-month period which began on October 1, 1957, and ended on June 30, 1958. Previous to October 1, 1957 the fiscal year for the Association ended on September 30. You will recall that the change was made in order to allow more time for the auditors to go over the books and make their report prior to the annual convention.

"The complete report is available to anyone who may wish to inspect it after this meeting. This has been gone over carefully by the Executive Council of your Association. If you cannot find time to look over it during the convention come to the headquarters of the Association and it will be made available to you. I have summarized it very briefly for this meeting as one could get lost in reading many figures.

"Our combined assets, general fund, convention fund, and sustaining membership fund as of June 30, 1959 were $145,445.08, with outstanding receivable accounts of $1,020.18, making a total of $146,465.26.

"All bills were paid and the only liabilities were those to membership in case of discontinuation of the Association which, of course, we have no intention to do. This liability set aside for return to members in case of such discontinuance has been set at $30,000. But let us not talk about such a catastrophe.

"Our financial committee has invested funds in government bonds, common stocks, corporate bonds, and savings in building and loan Associations. With the spiral of inflation ever staring us in the face we want to protect the Association against the ever decreasing value of the dollar. I am most happy, as I am sure you are, over the sound financial situation of this Association.

"Now I have not added the amount of $8.298.47 which is the Seaman Trust Fund set aside many years ago by Major Louis Livingston Seaman for an annual award. This money is in government bonds with a small savings account for the purpose of depositing the interest as it comes due.

"I feel that with your assistance and guidance we can look forward to a year in which we can increase our membership and give

our members an even better Association of Military Surgeons of the United States."

Mr. F. W. McCormack of the Group Insurance Department reported on the status of the Insurance Program, noting that it had been in existence now for a little over five years. The insurance program has been well received by the members. Recently the members were contacted by letters advising them of the renewal of the program of the Association since we were entering on the second five year program.

Brigadier General Leigh C. Fairbank, USA, Ret., presented a report of the Board of Trustees, Retirement Fund. The accounts were recently audited by the auditor of the Association. This Fund, established for the benefit of employees of the Association of Military Surgeons of the United States, has been made possible by a 4% levy on all gross income of the Association. One person, an employee of forty years, is now receiving retirement benefits. The funds are in government bonds, a savings account in a bank, and a checking account in a bank.

A motion was passed to receive the report.

The proposed amendment to Section 5, Article XII of the By-laws of the Association, which had been published in MILITARY MEDICINE in three non-consecutive issues was brought before the assembled members. A motion was passed to effect the change. Section 5, Article XII of the By-laws will now read:

"In order to provide sufficient capital for meeting contingent or expected payments from the Retirement Fund, the Executive Council (a) may at its discretion pay to the Treasurer of the Retirment Fund from the funds of the Association such amounts from time to time as the Council deems suitable, and (b) may at its discretion from time to time change the percentage of the current income of the Association to be set aside for the Retirement Fund, provided said percentage shall not be less than four percent (4%) nor in excess of eight percent (8%)."

The nominating Committee presented the following for office for 1960:

For President: Rear Admiral Richard A. Kern, MC, USNR, Ret.

For 1st Vice-President: Dr. Leroy E. Burney, Surgeon General, USPHS

For 2nd Vice-President: Maj. Gen. James P. Cooney, MC, USA

For 3rd Vice-President: Rear Adm. Calvin B. Galloway, MC, USN

For 4th Vice-President: Col. Robert C. Kimberly, MC, Md. NG

For 5th Vice-President: Dr. William S. Middleton, Chief Med. Dir., VA

For 6th Vice-President: Brig. Gen. M. Samuel White, USAF, MC

Secretary-Editor: Col. Robert E. Bitner, USA, Ret.

Motion was passed that the secretary cast a unanimous ballot for the slate as submitted by the Nominating Committee.

The Resolutions Committee reported that no resolutions had been submitted to its members and that they had none originating from the committee.

There being no further business the meeting was adjourned at 1:53 P.M.

ALPHABETICAL LIST OF ADVERTISERS